Program Schedule

AIAA Science and Technology Forum and Exposition 2015

January 05 - 09, 2015

The Program Report was last updated December 18, 2014 at 04:16 PM EST. To view the most recent meeting schedule online, visit https://aiaa-mst15.abstractcentral.com/planner.jsp

Monday, January 05, 2015

Time	Session or Event Info
8:00 AM-9:00 AM, Osceola Ballroom CD, **PLNRY-01. Opening Keynote** , Plenary, **Forum**	
9:00 AM-12:30 PM, St. George 112, **ISC-01. International Student Conference (Undergraduate Category)**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Chris Tavares, The Boeing Company	
9:00-9:30 AM	**Martian RHOVER Feasibility Study** J. Fuentes; R. Pankaja Kaluarachchi
9:30-10:00 AM	**Satellite Formation Control using Differential Drag** S.R. Omar; J.M. Wersinger
10:00-10:30 AM	**Manufacturing of Triaxial Quasi-three-dimensional Composite Materials** G. Peterson; D. Liu
10:30-11:00 AM	**The Design, Fabrication, and Evaluation of Millimeter Wave Lenses for Beamed Energy Applications** S.E. Sloan
11:00-11:30 AM	**Colorimetric hydrogel-based microfluidic assay system to monitor malnutrition in a microgravity environment** J.K. Tsosie
11:30-12:00 PM	**Significance of Constituent Chemical age on Solid Rocket Propellant Regression Rates** D.J. Dulin; G.S. Gibson
12:00-12:30 PM	**Aerodynamic Testing and Development of Sunswift eVe** S. Ambrose
9:30 AM-12:30 PM, Miami 2, **AA-01. Computational Aeroacoustics I**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Walter Eversman, Missouri University of Science and Technology	
9:30-10:00 AM	**A Computational Study of Flow Within Cavities with Complex Geometric Features** M.F. Barone; S. Arunajatesan
10:00-10:30 AM	**Hybrid RANS/LES Acoustics Prediction in Supersonic Weapons Cavity** R.E. Harris; E.F. Sheta; E.A. Luke; L.S. Ukeiley
10:30-11:00 AM	**Numerical Study of Synthetic-Jet Actuation Effect on Leading and Trailing Edge Noise** L.D. Nguyen; V.V. Golubev; R.R. Mankbadi; M. Sansone
9:30 AM-12:30 PM, Captiva 1, **AFM-01. AFM Best Student Paper Competition I**, Technical Paper, **AIAA Atmospheric Flight Mechanics Conference**, Chair: Bradley Burchett, Rose-Hulman Institute of Technology	
9:30-10:00 AM	**Effect of Trail Aircraft Size on Sweet Spot Location for a Conventional Aircraft Pair in Formation** W. Okolo; A. Dogan; W.B. Blake

10:00-10:30 AM	**Lagrangian Flow Structures Around a Flapping Wing** M. MacFarlane; J. Humbert
10:30-11:00 AM	**Evaluation of Hovering Thrust Performance of Shrouded Rotors for Multi-rotor UAVs to Reduce Weight** H. Otsuka; K. Nagatani; K. Yoshida
11:00-11:30 AM	**Rapid Modeling of Ablative Shape Change for Conceptual Hypersonic Mission Design** H. Saranathan; P. Geldermans; M.J. Grant
9:30 AM-12:30 PM, Captiva 2, **AFM-02. Aircraft Flight Dynamics, Handling Qualities and Performance I**, Technical Paper, **AIAA Atmospheric Flight Mechanics Conference**, Chair: Kamal Shweyk, Boeing Engineering Operations & Technology; Co-Chair: Richard Lind, University of Florida	
9:30-10:00 AM	**Program to Calculate the Performance of Airplanes Driven by a Fixed -Pitch Propeller** P.J. Boschetti; P. Gonzalez; E.M. Cardenas
10:00-10:30 AM	**Computational Analysis of the Blade Number Effect on the Performance of a Ducted Propeller** C. Echavarria; S. Poroseva
10:30-11:00 AM	**Experiment Design for Complex VTOL Aircraft with Distributed Propulsion and Tilt Wing** P.C. Murphy; D. Landman
11:00-11:30 AM	**NTSB Investigation of an Icing-Related Aerodynamic Stall Incident and Pilot Response** M. Moler; D.A. Crider; R. Cox
11:30-12:00 PM	**Piloted Simulation Handling Qualities Assessment of a Business Jet Fly-By-Wire Flight Control System** T. Berger; M. Tischler; S.G. Hagerott; C. Eckhart
12:00-12:30 PM	**Controllability Analysis of a Mass-Actuated Airplane** S. Erturk; A. Dogan
9:30 AM-12:30 PM, Tallahassee 1, **AMT-01. Pressure Sensitive Paint (PSP) and Novel Measurement Techniques**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: Christian Klein, DLR - German Aerospace Center; Co-Chair: Tianshu Liu, Western Michigan University	
9:30-10:00 AM	**Dynamic Response Characteristics of Polymer/Ceramic Pressure-Sensitive Paint** A. Pandey; J. Gregory
10:00-10:30 AM	**Global Skin-Friction Measurements Using Particle Image Surface Flow Visualization and a Luminescent Oil-Film** N.M. Husen; T. Liu; J. Sullivan
10:30-11:00 AM	**Application of Temperature and Pressure Sensitive Paints to DLR Hypersonic Facilities: "lessons learned"** W.H. Beck; C. Klein; U. Henne; J. Martinez Schramm; A. Wagner; K. Hannemann; T. Gawehn; A. Guelhan
11:00-11:30 AM	**Application of PSP Technique to Near-Field Sonic Boom Measurements in a Ballistic Range** D. Numata; K. Asai; K. Ohtani

11:30-12:00 PM	**Unsteady PSP Measurement of Transonic Buffet on a Wing** Y. Sugioka; D. Numata; K. Asai; S. Koike; K. Nakakita; S. Koga
12:00-12:30 PM	**Determining Aerodynamic Characteristics of an Unmanned Aerial Vehicle using a 3D Scanning Technique** O.D. Dantsker
9:30 AM-12:30 PM, Destin 1, **APA-01. Aerodynamic Design: Analysis, Methodologies & Optimization Techniques I**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: James Guglielmo, Boeing Defense, Space & Security	
9:30-10:00 AM	**Lift and Drag Measurements of a Gull-Wing Configuration Aircraft** T.W. Davis; G. Spedding
10:00-10:30 AM	**A Fast Approach to Model the Effects of Propeller Slipstream on Wing Load Distribution** C. Agostinelli; S. Simeone; A. Rampurawala; C.B. Allen; F. Zhu
10:30-11:00 AM	**Multi-Fidelity Multi-Disciplinary Propeller/Rotor Analysis and Design** N. Nigam; A. Tyagi; P. Chen; J.J. Alonso; F. Palacios; M.V. Ol; J. Byrnes
11:00-11:30 AM	**Application of Simplified Numerical and Analytical Methods for Rapid Analysis in Atmospheric Entry Vehicle Design** W.S. Hinman; S.J. Wilson; C.T. Johansen
11:30-12:00 PM	**Flight Dynamics Modeling of a Supersonic Aircraft Concept** K. Biber
9:30 AM-12:30 PM, Destin 2, **APA-02. Icing or Roughness Effects on Vehicle Aerodynamics I**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Jacob George, Metrolaser Inc.	
9:30-10:00 AM	**Feasibility Study of a Hybrid Ice Protection System Based on Passive Removal of Residual Ice** T. Strobl; D.S. Thompson; M. Hornung
10:00-10:30 AM	**High-Speed Imaging to Quantify the Transient Ice Accretion Process on a NACA 0012 Airfoil** R. Waldman ; Y. Liu; K. Zhang; H. Hu
10:30-11:00 AM	**Optimization of the Morphogenetic Approach for In-flight Icing** M.C. Butnarasu; W.G. Habashi; M. Fossati
11:00-11:30 AM	**An Experimental Investigation on the Unsteady Heat Transfer Process Over an Ice Accreting NACA 0012 Airfoil** H. Hu; Y. Liu; R. Waldman
9:30 AM-12:30 PM, Naples 1, **APA-03. Special Session: Low Reynolds Number Flight at a Crossroads**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Ming Chang, Lockheed Martin Aeronautics; Co-Chair: Dennis Finley, Lockheed Martin Aeronautics	
9:30-10:00 AM	**Safety-guaranteed Flight Test Environment for Micro Air Vehicles** D. Lee; J. Han
10:00-10:30 AM	**Mission-Driven Design and Fabrication of Fixed-, Flapping-, and Rotary-Wing Micro Air Vehicles** B.T. Pipenberg; M.D. Maughmer

10:30-11:00 AM	**Simulation and control of unsteady separated flows over wings at low Reynolds number** T. Colonius
11:00-11:30 AM	**Unsteady Aerodynamics of Low Reynolds Number Flight** L.P. Bernal; H. Yu
9:30 AM-12:30 PM, Naples 2, **APA-04. Special Session: CREATE-AV High Performance Computing Multiphysics Applications of Full-up Air Vehicles I,** Technical Paper, **53rd AIAA Aerospace Sciences Meeting,** Chair: Nathan Hariharan, CREATE-AV; Co-Chair: Theresa Shafer, NAVAIR	
9:30-10:00 AM	**Kestrel Current Capabilities and Future Direction for Fixed Wing Aircraft Simulations** S.A. Morton
10:00-10:30 AM	**Cartesian Adaptive Mesh Refinement with the HPCMP CREATE™-AV Kestrel Solver** T.A. Eymann; R.H. Nichols; T. Tuckey; D.R. McDaniel
10:30-11:00 AM	**Aeroelastic Simulations with Modal and Finite-Element Structural Solvers Using CREATE-AV/Kestrel v5** S.E. Lamberson; B.P. Hallissy
11:00-11:30 AM	**HPCMP CREATE™-AV and the Air Force Digital Thread** E. Kraft
11:30-12:00 PM	**Firebolt c2.0 – Unstructured Grid Navier-Stokes Code for Airframe/Propulsion Integration** R.H. Nichols; D.R. McDaniel; T. Tuckey; R. Koomullil; Y. Ito; J. Klepprt
12:00-12:30 PM	**Application of 3D Strand Solver to Rotorcraft Hover** A.M. Wissink; J. Sitaraman; A.J. Katz
9:30 AM-12:30 PM, Daytona 1, **FD-01. Bio-Inspired Flow,** Technical Paper, **53rd AIAA Aerospace Sciences Meeting,** Co-Chair: Kenneth Granlund, Air Force Research Laboratory; Chair: Melissa Green, Syracuse University	
9:30-10:00 AM	**Insect Kinematics in Trimmed Flight at Low Reynolds Numbers Using CFD** C. Badrya; J.D. Baeder
10:00-10:30 AM	**Experimental study of kinematics and fluid structure interaction of gravity driven falling plates** R. Tian; F. Shu
10:30-11:00 AM	**Three-Dimensional Separated Flow on a Flat Plate with Leading-Edge Serrations** M. Sakai; Y. Sunada; K. Rinoie
11:00-11:30 AM	**Effects of grooves on the formation of the LEV of an impulsively-started flat plate** R. Wahidi; A.W. Lang; J. Wilroy
9:30 AM-12:30 PM, Sanibel 1, **FD-02. CFD Methods I,** Technical Paper, **53rd AIAA Aerospace Sciences Meeting,** Chair: Hong Luo, North Carolina State University; Co-Chair: Kamran Mohseni, University of Florida	
9:30-10:00 AM	**Launch Environment Water Flow Simulation Using Smoothed Particle Hydrodynamics** B.T. Vu; J.J. Berg; M.F. Harris; A.C. Crespo

10:00-10:30 AM	**Towards the Implementation of Wind Turbine Simulations on Many-Core Systems** I.E. Venetis; N. Nikoloutsakos; E. Gallopoulos; J.A. Ekaterinaris
10:30-11:00 AM	**Observable Euler Equations for Inviscid Regularized Two Phase Flow Simulation** D.M. Lipinski; K. Mohseni
11:00-11:30 AM	**Advanced Optimizations of An Implicit Navier-Stokes Solver on GPGPU** L. Luo; J.R. Edwards; H. Luo; F. Mueller
11:30-12:00 PM	**Development of Robust Cryogenic Cavitation Modeling Capability in an Advanced CFD Solver** S.S. Thakur; J. Wright; C. Segal
12:00-12:30 PM	**Subgrid Model for Shear Rate in Multiphase Simulations** P. Zhang; K. Mohseni
9:30 AM-12:30 PM, Daytona 2, **FD-03. Discontinuous Galerkin Methods for Turbulent Flows**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Per-Olof Persson, University of Cincinnati; Co-Chair: Marshall Galbraith	
9:30-10:00 AM	**A discontinuous Galerkin method for implicit LES of moderate Reynolds number flows** C. Carton de Wiart; K. Hillewaert
10:00-10:30 AM	**Evaluation of a Discontinuous Galerkin Implementation of RANS and Spalart Allmaras Turbulence Model** C.R. Schrock; J.A. Benek; M.C. Galbraith; R.D. Knapke; M.G. Turner
10:30-11:00 AM	**A Fourth Order Accurate Cellwise Relaxation Implicit Discontinuous Galerkin Scheme for Solving RANS Equations** H. Asada; K. Yasue; Y. Ogino; K. Sawada
11:00-11:30 AM	**Turbulent Flow Simulations with the High-Order DG Solver Aghora** F. Renac; M. de la Llave Plata; E. Martin; J. Chapelier; V. Couaillier
11:30-12:00 PM	**A high-order Discontinuous Galerkin Chimera method for laminar and turbulent flows** M. Wurst; M. Kessler; E. Kraemer
12:00-12:30 PM	**Using LES in a Discontinuous Galerkin method with constant and dynamic SGS models** M.J. Brazell; M.J. Brazell; M.K. Stoellinger; D.J. Mavriplis
9:30 AM-12:30 PM, Sanibel 2, **FD-04. Experimental and Numerical Investigations of Blunt Leading Edge Separation for a 53 Degree Swept Diamond Wing (STO AVT-183) I (Invited)**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: Stephan Hitzel, Airbus Defence & Space , Military Aircraft; Co-Chair: Russell Cummings, US Air Force Academy	
9:30-10:00 AM	**A Reduced-Complexity Investigation of Blunt Leading-Edge Separation Motivated by UCAV Aerodynamics (Invited)** J.M. Luckring; O.J. Boelens
10:00-10:30 AM	**Numerical and Theoretical Considerations for the Design of the AVT-183 Diamond-Wing Experimental Investigations (Invited)** O.J. Boelens; J.M. Luckring; S. Deck

10:30-11:00 AM	**Leading-Edge Roughness Effects on the Flow Separation Onset of the AVT-183 Diamond Wing Configuration (Invited)** A. Hövelmann; F. Knoth; C. Breitsamter
11:00-11:30 AM	**Experimental Analyses on the Flow Field Characteristics of the AVT-183 Diamond Wing Configuration (Invited)** A. Hövelmann; M. Grawunder; A. Buzica ; C. Breitsamter
11:30-12:00 PM	**Incompressible flow calculations of blunt leading edge separation for a 53 degree swept diamond wing (Invited)** M. Visonneau; E. Guilmineau; S.L. Toxopeus
12:00-12:30 PM	**Numerical Investigations of Flow Separation on the AVT-183 53 Degree Swept Diamond Wing Configuration** D. Daniel; D.J. Malloy; D.A. Reasor; C.C. Morris
9:30 AM-12:30 PM, Sanibel 3, **FD-05. Shock-Dominated Flows I**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: Paul Orkwis, University of Cincinnati; Co-Chair: Deborah Levin, Pennsylvania State University	
9:30-10:00 AM	**Shock Wave-Boundary-Layer Interactions in Subsonic Intakes at High Incidence** T.E. Makuni; H. Babinsky; M. Slaby; C.T. Sheaf
10:00-10:30 AM	**Numerical Investigation of Transonic Airfoil Buffet Suppression** Z. Zhang; K. Qu
10:30-11:00 AM	**On the Drag Efficiency of Counterjets in Low Supersonic Flow** R. Lohner; J.D. Baum
11:00-11:30 AM	**Study of Shock-Shock Interactions for a Double Wedge Configuration Using the SUGAR Code** S.S. Sawant; B. Korkut; D.A. Levin
9:30 AM-12:30 PM, Sun Ballroom A, **FD-57. New and Revolutionary Approaches in High Speed Flow Turbulence Modeling**, Panel, **53rd AIAA Aerospace Sciences Meeting (non-paper sessions)**, Chair: Rengasamy Ponnappan; Co-Chair: Gregory Blaisdell, Purdue University	
9:30 AM-12:30 PM, Sun Ballroom C, **GEPC-01. N+3 Configuration Concepts and Enabling Technologies in NASA's Fixed Wing Project**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Richard Wahls, NASA-Langley Research Center; Co-Chair: Nateri Madavan, NASA-Ames	
9:30-10:00 AM	**Final Results of the Subsonic Ultra Green Aircraft Research (SUGAR) Study** M.K. Bradley; C.K. Droney
10:00-10:30 AM	**Development and Assessment of the Conceptual Design for an Advanced Civil Transport: An Industry-NASA-University Collaborative Enterprise** A. Uranga; E. Greitzer; M. Drela
10:30-11:00 AM	**Power Balance Assessment of BLI Benefits for Civil Aircraft** A.C. Huang; D.K. Hall; A. Uranga; E. Greitzer

11:00-11:30 AM	**Boundary Layer Ingestion Benefit of the D8 Subsonic Transport** A. Uranga; M. Drela; E. Greitzer; N. Titchener; M.K. Lieu; N. Siu; A.C. Huang; C. Casses; E. van Dam; G.M. Gatlin; J. Hannon
11:30-12:00 PM	**Engine Architecture for High Efficiency at Small Core Size** W.K. Lord; G. Suciu; J. Chandler; K. Hasel
9:30 AM-12:00 PM, Sun Ballroom 3, **GNC-01. Aerospace Robotics and Autonomous/Unmanned Systems I**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Co-Chair: Lorenzo Pollini, University of Pisa; Co-Chair: Mark Balas, Embry-Riddle Aeronautical University; Co-Chair: Yang Cheng, Mississippi State University	
9:30-10:00 AM	**Optimal Airborne Trajectories for Data Collection from Wireless Sensor Networks by Direct Collocation Methods** N.M. Jodeh; R. Cobb; R.A. Livermore
10:00-10:30 AM	**Centrifugally Stiffened Rotor: A Complete Derivation and Simulation of the Inner Loop Controller** J.M. Selfridge
10:30-11:00 AM	**A Vision-Based Proportional Navigation Guidance Law for UAS Sense and Avoid** M. Clark; Z. Kern; R.J. Prazenica
11:00-11:30 AM	**Human-In-The-Loop Control of Guided Airdrop Systems** M.R. Cacan; M.B. Ward; E. Scheuermann; M. Costello
11:30-12:00 PM	**Neural Network Based Control of an Airplane UAV using Radial Basis Functions** S. Bhandari; J. Novak
9:30 AM-12:30 PM, Miami 1, **Flight Experience of Cassini Spacecraft Attitude Control at Saturn**	
9:30-10:00 AM	**Video Presentation** Ring World 3 – The Latest Discoveries of the Cassini Mission at Saturn produced by the Jet Propulsion Laboratory, Pasadena, CA.
10:00-10:30 AM	**Cassini Attitude and Articulation Control Subsystem Fault Protection Challenges During Saturn Proximal Orbits** D.M. Bates
10:30-11:00 AM	**Inflight Characterization of the Cassini Spacecraft Propellant Slosh and Structural Frequencies** J. Stupik; A.Y. Lee
11:00-11:30 AM	**Titan Density Reconstruction Using Radiometric and Cassini Attitude Control Flight Data** L.G. Andrade; T.A. Burk; F. Pelletier
11:30-12:00 PM	**Precise Pointing for Radioscience Occultations and Radar Mapping during the Cassini Mission at Saturn** T.A. Burk
9:30 AM-12:30 PM, Sun Ballroom 4, **GNC-03. GNC Sensor Systems I**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Chair: Susan Frost, NASA-Ames Research Center; Co-Chair: SUBRAMANIAN RAMASAMY, RMIT University	

9:30-10:00 AM	**Sensitivity Analysis of Model-based Synthetic Air Data Estimators** F. Lie; D. Gebre-Egziabher
10:00-10:30 AM	**Covariance Analysis of Sensors for Wind Field Estimation by Small Unmanned Aircraft** J.S. Elston; B. Argrow; M. Stachura
10:30-11:00 AM	**Biomimetic optical sensor for real-time aircraft wing deflection measurement** S.A. Frost; C. Wright; M. Khan
11:00-11:30 AM	**Analysis of the Accuracy of MEMS Magnetometers in Small UAS for use in State Estimation** T.W. Nichols; J.S. Elston; B. Argrow
11:30-12:00 PM	**Innovative Navigation and Guidance System for Small-to-Medium Size Unmanned Aircraft using Low-Cost Sensors** S. RAMASAMY
12:00-12:30 PM	**Sensitivity Analysis of an Automated Formation Flight Based on GPS and Transmission Data Specifications** M.C. Kilic; M.J. Meiboom
9:30 AM-12:30 PM, Sun Ballroom 6, **GNC-04. Missile Guidance I**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Chair: Ashwini Ratnoo, ; Co-Chair: Jarret Lafleur, Sandia National Laboratories	
9:30-10:00 AM	**Velocity To Be Gained Guidance for a Generic 2D Course Correcting Fuze** P. Strömbäck; J.W. Robinson
10:00-10:30 AM	**Exo-Atmospheric Mid-Course Guidance** S. Gutman; S. Rubinsky
10:30-11:00 AM	**Near-Optimal Minimum Time Guidance under a Spatial Angular Constraint in Atmospheric Flight** N. Indig; J. Z. Ben-Asher; E. Sigal
11:00-11:30 AM	**Intercept Angle Guidance Under Time Varying Speed** I. Taub
11:30-12:00 PM	**Look Angle Constrained Impact Angle Control Based on Proportional Navigation** K.S. Erer; R. Tekin; M. Ozgoren
12:00-12:30 PM	**Precision Munition Guidance and Moving Target Position Estimation** S. S
9:30 AM-12:30 PM, Sun Ballroom 5, **GNC-05. Novel Navigation, Estimation, and Tracking Methods I**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Co-Chair: Nisar Ahmed; Chair: William Whitacre, Draper Laboratory	
9:30-10:00 AM	**Orbit Estimation Of A Continuously Thrusting Satellite Using Variable Dimension Filters** G.M. Goff; J. Black; J.A. Beck
10:00-10:30 AM	**Line of Sight Alignment Algorithms for Future Gravity Missions** F. Ales; P. Gath; U. Johann; C. Braxmaier
10:30-11:00 AM	**Bio-Inspired Absolute Heading Sensing Based on Atmospheric Scattering** J.R. Ashkanazy; J. Humbert
11:00-11:30 AM	**In-motion Alignment of Inertial Navigation System with Doppler Speed Measurements** K. Bimal Raj; A. Joshi

11:30-12:00 PM	**A Monocular Vision-aided Inertial Navigation System with Improved Numerical Stability** D.P. Magree; E.N. Johnson
9:30 AM-12:30 PM, Miami 3, **GT-01. New Capabilities in Ground Test Facilities I**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: George Sydnor, NASA Langley Research Center; Co-Chair: Ray Rhew, NASA-Langley Research Center	
9:30-10:00 AM	**Historical Overview and Recent Improvements at the NASA Glenn Research Center 8x6/9x15 Wind Tunnel Complex** J. Dussling
10:00-10:30 AM	**New Model Roll Mechanism (MRM) for the Boeing Transonic Wind Tunnel (BTWT)** D.L. Belter
10:30-11:00 AM	**Acoustic Testing Upgrades at the LLF** G. Eitelberg
11:00-11:30 AM	**COBRA Data System Upgrades at GRC** J. Panek
11:30-12:00 PM	**Moving Belt for Ground Proximity Simulation Upgrade at the LLF** G. Eitelberg
12:00-12:30 PM	**Transforming Testing Capabilities at the Ames UPWT** J. Bell
9:30 AM-12:30 PM, Emerald 1, **GTE-01. Gas Turbine Combustion I**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Sundaresa Subramanian, QuEST Global, Inc.	
9:30-10:00 AM	**NOx Emissions Performance and Correlation Equations for a Multipoint LDI Injector** Z.J. He; C. Chang; C. Follen
10:00-10:30 AM	**Updates to Simulation of a Single-Element Lean-Direct Injection Combustor Using Arbitrary Polyhedral Meshes** C.T. Wey; N. Liu
10:30-11:00 AM	**Optimization of Ultra Compact Combustor Flow Path Splits** A. Cottle; M.D. Polanka
11:00-11:30 AM	**Numerical Investigation of the Entropy Wave Generator Test Case Using Multirate Impedance Boundary Conditions** J. Lourier; B. Noll; M. Aigner
11:30-12:00 PM	**Early-Stage Design Optimization of a Turbofan for Low NOx Emissions at Off-Design Operating Conditions** L. Zilhão; J.M. Melo De Sousa
9:30 AM-12:30 PM, Tallahassee 2, **HIS-01. Topics in Aerospace History**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: William Barry, NASA HQ	
9:30-10:00 AM	**The First Aerial Raid From Portugal to Macau** F.P. Neves; J.M. Barata; A.R. Silva

10:00-10:30 AM	**First Aerial South Atlantic Night Crossing** F.P. Neves; J.M. Barata; A.R. Silva
10:30-11:00 AM	**Flight Is Not Improbable. Octave Chanute Combines Civil Engineering With Aeronautics** S. Short
11:00-11:30 AM	**The Earliest Russian Wind Tunnels** A. Gorbushin
9:30 AM-12:30 PM, Emerald 8, **HSABP-01. High Speed Inlets**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Guillermo Paniagua, von Karman Institute; Co-Chair: Daniel Kirk, Florida Institute of Technology	
9:30-10:00 AM	**Numerical and Experimental Research of Mass Addition in Inlet at High Velocities** V.A. Vinogradov; A.G. Makarov; I.V. Potekhina; V.A. Stepanov
10:00-10:30 AM	**Viscous Effects and Truncation Effects in Axisymmetric Busemann SCRamjet Intakes** A.K. Flock; A. Guelhan
10:30-11:00 AM	**HIFiRE-6 Unstart Conditions at Off-Design Mach Numbers** E.J. Stephen; S.R. Hoenisch; C.J. Riggs; M.L. Waddel; M.A. Bolender; T.E. McLaughlin
11:00-11:30 AM	**Flight test of a rugged scramjet-inlet temperature and velocity sensor** J. Kurtz; M. Aizengendler; Y. Krishna; P. Walsh; S. O'Byrne
11:30-12:00 PM	**Flow Visualization and Fluctuating Pressure Measurements in an Internal Compression Inlet** H. TABANLI; K.B. Yuceil
12:00-12:30 PM	**Experimental investigation of a Mach 4 shock-wave turbulent boundary layer interaction near an expansion corner** A. SathiaNarayanan; S. Verma
9:30 AM-12:30 PM, Osceola Ballroom 3, **IS-01. Intelligent Systems Special Session-Student Paper Competition**, Technical Paper, **AIAA Infotech @ Aerospace**, Chair: Soon-Jo Chung, University of Illinois at Urbana-Champaign	
9:30-10:00 AM	**Human Agent Interfaces as a Key Element for the Dialog between Human Crews and Cognitive Automation** Y. Brand; A. Schulte
10:00-10:30 AM	**Mixed-Initiative Interaction in Manned-Unmanned-Teaming Mission Planning: Design and Evaluation of a Prototype** F. Schmitt; A. Schulte
10:30-11:00 AM	**A Constrained Markov Decision Process for Flight Safety Assessment and Management** S. Balachandran; E.M. Atkins
11:00-11:30 AM	**Signal Source Localization Using Partially Observable Markov Decision Processes** L.K. Dressel; M.J. Kochenderfer
11:30-12:00 PM	**Adaptive Algorithms for Autonomous Data-Ferrying in Nonstationary Environments** A.M. Axelrod; G. Chowdhary

9:30 AM-12:30 PM, Osceola Ballroom 2, **IS-02. Augmenting Adaptive Algorithms for Aircraft Control I**, Technical Paper, **AIAA Infotech @ Aerospace**, Chair: Nhan Nguyen, NASA-Ames Research Center	
9:30-10:00 AM	**Adaptive Linear Quadratic Gaussian Optimal Control Modification for Flutter Suppression of Adaptive Wing** N.T. Nguyen; S. Swei
10:00-10:30 AM	**Optimal Filter Design for a Discrete-Time Formulation of L1-Adaptive Control** H. Jafarnejadsani; N. Hovakimyan
10:30-11:00 AM	**Performance Oriented Adaptive Architectures with Guaranteed Bounds** B.C. Gruenwald; T. Yucelen; M. Fravolini
11:00-11:30 AM	**Demand-side energy management using an adaptive control strategy for aggregate thermostatic loads** M. Ghanavati; A. Chakravarthy
11:30-12:00 PM	**Bayesian Modeling for Decentralized UAV Control and Task Allocation** S. Hening; P. Regueiro; A. Rodriguez; M. Teodorescu; N.T. Nguyen; C.A. Ippolito
9:30 AM-12:30 PM, St. George 114, **ISC-04. International Student Conference (Community Outreach Category)**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Rachel Andino, AIAA-American Institute of Aeronautics and Astronautics	
9:30-10:00 AM	**New Mexico State University Community Outreach with University Nanosat Program** C. Barberan
10:00-10:30 AM	**Integrated Middle School Educational Outreach Program** J. Gong; C. Reynolds
10:30-11:00 AM	**UB UAV Community Outreach** B. Bergh; T. Lutz; A. Lyons; M. West; M. Majji
11:00-11:30 AM	**Engineers on Deck** C. Shields; R. Swasey
11:30-12:00 PM	**MSU Space Cowboys Outreach** A. Sanford
12:00-12:30 PM	**USAFA STEM Outreach for Advancing Aeronautical and Astronautical Engineering** T.A. Hudson
9:30 AM-10:30 AM, Osceola Ballroom A, **LEC-01. SSC Lecture: Advanced Solar Arrays for NASA Electric Propulsion Missions**, Lecture, **2nd AIAA Spacecraft Structures Conference (non-paper sessions)**	
9:30 AM-12:30 PM, Sarasota 1, **MAT-01. Nanostructured Materials I**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Gregory Odegard, Michigan Technological University; Co-Chair: Samit Roy, The University of Alabama; Co-Chair: Brian Wardle, Massachusettes Institute of Technology	
9:30-10:00 AM	**Microstructure and High Through-thickness Thermal Conductivity of Graphite Fiber Composite for Structural Applications** A. Hao; S. Wang; J. Horne; M. Yang; R.Z. Liang; J.H. Koo

10:00-10:30 AM	**Molecular dynamics of SWNT/Epoxy nanocomposites** N. Fasanella; V. Sundararaghavan
10:30-11:00 AM	**Fracture Toughness of Aligned Carbon Nanotube Polymer Nanocomposites** S.S. Wicks; A.S. Vazquez; B.L. Wardle
11:00-11:30 AM	**Experimental Characterization of Damage Evolution in Carbon Nanotube-Polymer Nanocomposites** E. Sengezer; G.D. Seidel
11:30-12:00 PM	**Interlaminar Shear Strength Investigation of Aligned Carbon Nanotube-Reinforced Prepreg Composite Interfaces** D. Lewis; B.L. Wardle
12:00-12:30 PM	**An interphase design strategy for multifunctional polymer nanocomposites using multiscale method** J. Choi; H. Shin; M. Cho
9:30 AM-12:30 PM, Sarasota 2, **MAT-02. Advanced Materials and Processes,** Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference,** Chair: David Powell; Co-Chair: Antonio Avila, Universidade Federal de Minas Gerais	
9:30-10:00 AM	**Micromechanical modeling of metal-ceramic composites for high temperature applications** P. Deierling; O.I. Zhupanska; C.L. Pasiliao
10:00-10:30 AM	**Developing Strong and Tough Junctions in Carbon Fiber Composites via Hybridization with Electrospun Polymer Nanofibers** M. Naraghi; S. Hong
10:30-11:00 AM	**Controlling Microstructure and Polymer Deformation with Polarized Light in Liquid Crystal Polymer Networks** J. Bin; W.S. Oates
11:00-11:30 AM	**Sapphire Laser Machining Modeling and Experimental Validation for High Temperature Pressure Transducer Development** W.S. Oates; P. Woerner
9:30 AM-12:30 PM, Sarasota 3, **MDO-01. MDO: Aircraft Systems Design Applications,** Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference,** Chair: Timothy Takahashi, Arizona State University; Co-Chair: Edward Alyanak, AFRL/RQVC	
9:30-10:00 AM	**Multi-Disciplinary Optimization of a Near Sonic Airliner** V. Mirochnitchenko; M. Swann; D. Stallngs; M. Merrell; D. Miller; T.T. Takahashi
10:00-10:30 AM	**Aircraft Trajectory Optimisation using Wind Forecasting Data** Z. Assaad; M. Moore; C. Bil; A. Eberhard
10:30-11:00 AM	**Value-Driven Design of Non-Commercial Systems using Bargain Modeling** E.D. Goetzke; C.L. Bloebaum; B. Mesmer
11:00-11:30 AM	**Rapid Development of Bespoke Sensorcraft: A Proposed Design Loop** C. Paulson; A. Sobester; J. Scanlan

11:30-12:00 PM	**A modular adjoint approach to aircraft mission analysis and optimization** J. Kao; J. Hwang; J. Martins
12:00-12:30 PM	**Integrated Global Wing and Local Panel Optimization of Aircraft Wing** Q. Liu; M. Jrad; S.B. Mulani; R.K. Kapania
9:30 AM-12:30 PM, Osceola Ballroom 5, **MDO-02. MDO: Fundamental Algorithms & Processes I**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Andy Ko, Phoenix Integration, Inc.; Co-Chair: Jeff Parrish, University of Calgary	
9:30-10:00 AM	**Discrete Adjoint Formulation for Continuum Sensitivity Analysis** M.D. Kulkarni; R.A. Canfield; M. Patil
10:00-10:30 AM	**Simple and inexpensive algorithm for surrogate filtering** S. Choze; F.A. Viana
10:30-11:00 AM	**Stress Constrained Optimization using SLP Level Set Topology Optimization** C.J. Brampton; P.D. Dunning; H.A. Kim
11:00-11:30 AM	**Approximation of the Pareto Surface via a Hybrid of Scalarization Method and Evolutionary Algorithm** T. Erfani; H. Samami; R. Erfani; S. Utyuzhnikov
11:30-12:00 PM	**Graph Coarsening Method for KKT Matrices Arising from Orthogonal Collocation Methods for Optimal Control Problems** B. Senses; T.A. Davis; A.V. Rao
12:00-12:30 PM	**Multifidelity Optimization using Statistical Surrogate Modeling for Non-Hierarchical Information Sources** R. Lam; D.L. Allaire; K.E. Willcox
9:30 AM-12:30 PM, Sun Ballroom 1, **MST-01. Air Traffic Management I**, Technical Paper, **AIAA Modeling and Simulation Technologies Conference**, Chair: Jeffery Schroeder, Federal Aviation Administration	
9:30-10:00 AM	**Modeling of Complex and Diverse Aircraft Trajectories with the Trajectory Synthesizer Generalized Profile Interface** A.G. Lee; M.G. Wu; M. Abramson
10:00-10:30 AM	**Analysis of the Impact of Performance Model Accuracy on 4D Trajectory Optimization** M. Battipede; G. Sirigu; M. Cassaro; P. Gili
10:30-11:00 AM	**Improving Aircraft Collision Risk Estimation using the Cross-Entropy Method** Y. Kim; M. Kochenderfer
11:00-11:30 AM	**Trajectory Analysis for Accident Investigation** D.A. Crider
11:30-12:00 PM	**A Speech-Enabled Simulation Interface Agent for Airspace System Assessments** H. Lu; V.H. Cheng; D. Ballinger ; A. Fong; J. Nguyen; S. Jones; S.E. Cowart

9:30 AM-12:30 PM, Sun Ballroom 2, **MST-02. Hardware In the Loop Simulation**, Technical Paper, **AIAA Modeling and Simulation Technologies Conference**, Chair: Scott Kowalchuk, Sandia National Laboratories	
9:30-10:00 AM	**Rapid Prototyping of Hardware Using Real-Time HWIL Simulation Environments** J. Torres; M. Schrempp; S.A. Kowalchuk
10:00-10:30 AM	**FLINT - a highly-flexible HWIL solution for GPU accelerated scene generation and sensor modeling** J.R. Grimes; W.L. Herald; R.A. Thompson
10:30-11:00 AM	**Distributed Hardware-In-Loop Simulations for multiple Autonomous Aerial Vehicles** S.A. Hangal; B. Tak; H. Arya
11:00-11:30 AM	**Developing and Testing ECUs for Electric Drives** A. Himmler; M. Muli
11:30-12:00 PM	**Pitch Axis Control for a Guided Projectile in a Wind Tunnel-based Hardware-In-the-Loop Setup** G. STRUB; S. Theodoulis; V. Gassmann; S. Dobre; M. Basset
9:30 AM-11:30 AM, Osceola Ballroom B, **PANEL-01. U.S. Government Aerospace Technology Roadmaps**, Panel, **Forum 360**	
9:30 AM-12:30 PM, Emerald 2, **PC-01. Plasma Assisted Combustion I: AFOSR MURI Reports** , Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Julian Tishkoff; Co-Chair: Walter Lempert, Vanderbilt University	
9:30-10:00 AM	**An Overview or the AFOSR Plasma Assisted Combustion MURI Program** W.R. Lempert
10:00-10:30 AM	**Challenges in Understanding and Predictive Modeling of Plasma Assisted Combustion** I.V. Adamovich; W.R. Lempert; J.A. Sutton
10:30-11:00 AM	**Plasma assisted combustion: kinetic studies and new combustion technology** Y. Ju; J.K. Lefkowitz; T. Wada; X. Yang; S. Won; W. Sun
11:00-11:30 AM	**Atmospheric Pressure Plasma Based Flame Control and Diagnostics** R.B. Miles
11:30-12:00 PM	**Plasma Assisted Combustion Mechanism for Small Hydrocarbons** A. Starikovskiy
12:00-12:30 PM	**Non-Equilibrium Plasma-Assisted Flow Reactor Studies of Highly Diluted Reactive Mixtures** N. Tsolas; K. Togai; R.A. Yetter
9:30 AM-12:30 PM, Emerald 3, **PC-02. Advanced Combustion Concepts I**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: M. Anand, Rolls-Royce Corp	
9:30-10:00 AM	**Oxygen-rich Combustion of A Porous Cylindrical Burner** K. Pan; S. Chen
10:00-10:30 AM	**Electro-chemical propulsion for space exploration** A. Ingenito; A. Agresta; R. Andriani; F. Gamma

9:30 AM-12:30 PM, Emerald 5, **PC-03. Spray and Droplet Combustion I**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: Bruce Chehroudi, European Research Council (ERC); Co-Chair: Josette Bellan, Jet Propulsion Laboratory	
9:30-10:00 AM	**A priori and a posteriori analyses of multi-species turbulent mixing layers at supercritical-p conditions** G. Borghesi; J.R. Bellan
10:00-10:30 AM	**Simulation of Subcritical Primary Atomization in a Rule-Based CFD Framework Using Stochastic Modeling** S.S. Thakur; M. Kumar; E.A. Luke
10:30-11:00 AM	**Ray tracing analysis of realistic atomizing jet geometries for optical connectivity applications** G. Charalampous; N. Soulopoulos; Y. Hardalupas
11:00-11:30 AM	**Exploration of Gas Phase Properties in Aerated-Liquid Jets Using X-Ray Fluorescence** K. Lin; C.D. Carter; S.K. Smith; A. Kastengren
11:30-12:00 PM	**Modeling the Diffusion to Kinetically Controlled Burning Transition of Micron-Sized Aluminum Particles** B.T. Bojko; P. DesJardin
9:30 AM-12:30 PM, Emerald 7, **PC-04. Turbulent Combustion I**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: Tim Lieuwen, Georgia Institute of Technology; Co-Chair: Joseph Oefelein, Sandia National Laboratories	
9:30-10:00 AM	**Large-eddy simulation of a turbulent sooting flame in a swirling combustor** H. Koo; V. Raman; M.E. Mueller; K. Geigle
10:00-10:30 AM	**Measurements of Premixed Turbulent Combustion Regimes of High Reynolds Number Flames** J. Temme; T.M. Wabel; A.W. Skiba; J.F. Driscoll
10:30-11:00 AM	**Propagation of Premixed Flame Kernels in High Speed Channel Flows with Moderate Turbulence** N.R. Grady; R.W. Pitz; S. Menon; B.A. Ochs; D.E. Scarborough; T.A. Slais
11:00-11:30 AM	**Characterization of the Temperature and Velocity Field Structure in Turbulent Premixed Jet Flames** P. Allison; H. Shen; T.A. McManus; J.A. Sutton
9:30 AM-12:30 PM, Tampa 2, **SD-01. Computational Aeroelasticity**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Kenneth Griffin, Southwest Research Institute; Co-Chair: Bryan Glaz, U. S. Army Research Laboratory (APG)	
9:30-10:00 AM	**Numerical Study of the Transonic Limit Cycle Oscillation Phenomenon on the F-16 Fighter Aircraft** D.E. Raveh; M. Iovnovich; D. Michaels; M. Adar
10:00-10:30 AM	**Adjoint-Based h-adaptive Calculation of Generalized Aerodynamic Forces** M. Bhatia; P.S. Beran

10:30-11:00 AM	**Aeroelastic Stability Predictions of a Business Jet Landing Gear Door using High Fidelity Fluid-Structure Interaction Tools** E. Blades; A. Cornish
11:00-11:30 AM	**Forced and Aeroelastic Response of Bird-Damaged Fan Blades - A Comparison and Its Implications** E.R. Muir; P.P. Friedmann
11:30-12:00 PM	**Accelerated convergence of static aeroelasticity using low-fidelity aerodynamics** K. Jovanov; R. De Breuker
9:30 AM-12:30 PM, Tampa 3, **SD-02. Large-deformation Nonlinear Dynamics**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Dexter Johnson, NASA Glenn Research Center; Co-Chair: William Schneider, Lockheed Martin Aeronautics	
9:30-10:00 AM	**An Enhanced Modal Approach for Large Deformation Modeling of Wing-Like Structures** M. Ritter; C.E. Cesnik; W.R. Krüger
10:00-10:30 AM	**Reduced order modeling of loads and deformation of a flexible flapping wing** J. Tran; J. Sirohi; H. Gao; M. Wei
10:30-11:00 AM	**Nonlinear Aeroelastic Modeling and Analysis of Flexible Wind Turbine Blades** W. Su; W. Song
11:00-11:30 AM	**Nonlinear Aeroservoelastic Analysis of Flexible Aircraft Described by Large Finite-Element Models** Y. Wang; A. Wynn; R. Palacios
11:30-12:00 PM	**Nonlinear Model Updating of a Cantilevered Plate and a Stiffened Skin Panel from a Lynx Helicopter** M.S. Allen; B. Weekes
12:00-12:30 PM	**Limit-cycle Oscillations of a pretensed Membrane Strip** A. Drachinsky; D.E. Raveh
9:30 AM-12:30 PM, Osceola Ballroom 6, **SD-03. Vehicle/Component Dynamic Environment and Loads**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Alessandro Scotti, Pilatus Aircraft Ltd; Co-Chair: Jack McNamara, The Ohio State University	
9:30-10:00 AM	**Analytical Prediction and Test Correlation of Spacecraft Cavity Acoustic Environment** D. Inoyama; R. Agarwal; T. Stoumbos
10:00-10:30 AM	**Integrated Flight Dynamics and Aeroelasticity of Flexible Aircraft with Application to Swept Flying Wings** R.J. Simpson; R. Palacios; P.J. Goulart
10:30-11:00 AM	**Static and Dynamic Buckling of a DAEDALOS Composite Panel Including Material Damping** M.J. Dalenbring; U. Falk; A.B. Zdunek; C. Bisagni; R. Vescovini
11:00-11:30 AM	**Integrated Flexible Dynamic Maneuver Loads Models based on Aerodynamic Influence Coefficients of a 3D Panel Method** T.M. Kier

11:30-12:00 PM	**PyPAD: A Multidisciplinary Framework for Preliminary Airframe Design** L. Travaglini; S. Ricci; G. Bindolino
9:30 AM-12:30 PM, Osceola Ballroom 1, **SEN-01. Information Fusion**, Technical Paper, **AIAA Infotech @ Aerospace**, Chair: Thomas Frey, Lockheed Martin Aeronautics	
9:30-10:00 AM	**Increasing the Convergence Rate of the Extended Kalman Filter** M.B. Rhudy
10:00-10:30 AM	**Consensus based Heuristic Algorithm for Distributed Sensor Management** K. Neema; D.A. DeLaurentis
10:30-11:00 AM	**Multipath Routing and Sensor-Wireless Scheduling to Reduce Latency and Packet Loss over Tactical Wireless Networks** R.E. Tuggle
11:00-11:30 AM	**Autonomous Flight Path Planning for Traffic Monitoring in Wireless Sensor Networks** N.M. Jodeh; R. Cobb
11:30-12:00 PM	**A Constrained Altruistic Method for Balancing Tracking Responsibility in a Distributed Fusion Network** T.L. Frey
9:30 AM-12:30 PM, Sun Ballroom D, **STR-01. Special Sessions in Honor of Prof. Harry H. Hilton I** , Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Cristina Beldica, University of Illinois-NCSA; Co-Chair: Rani Sullivan, Mississippi State University	
9:30-10:00 AM	**Creep Buckling of Viscoelastic Columns Modeled using Anelastic Displacement Fields** G.A. Lesieutre
10:00-10:30 AM	**Time to Flutter of a Viscoelastic Goland Wing** C.G. Merrett
10:30-11:00 AM	**Large-Strain Viscoelastic Constitutive Models for Thin Polyethylene Films** J. Li; K. Kwok; S. Pellegrino
11:00-11:30 AM	**Generalized Unified Formulation Shell Element for Functionally Graded Variable-Stiffness Composite Laminates and Aeroelastic Applications** L. Demasi; Y. Ashenafi; R. Cavallaro
11:30-12:00 PM	**Vibration Mitigation in Composite Plates using an Electromagnetic Field** D. Chernikov; P. Krokhmal; O.I. Zhupanska
12:00-12:30 PM	**Nonlinear Structural Analysis of a Icosahedron and Its Application to Lighter Than Air Vehicles Under an Internal Vacuum** A.N. Palazotto
9:30 AM-12:30 PM, Tampa 1, **STR-02. ICME for Structures**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Stephen Engelstad, Lockheed Martin Aeronautics; Co-Chair: Steven Arnold, University of Heidelberg, Germany; Co-Chair: Josh Dustin, GE-Aviation	

9:30-10:00 AM	**Integrated Computational Materials Engineering for Airframe Composite Structure Applications** S.P. Engelstad; R.W. Koon; J. Action; J.M. Riga; A.M. Waas; D. Robbins; R.W. Dalgarno; A.R. Arafath; A. Poursartip
10:00-10:30 AM	**Recent Progress in Implementation of ICME for Metallic Materials in the Airframe Industry** R.J. Glamm; D.M. Rosenbladt; E.D. Pripstein; J.D. Cotton
10:30-11:00 AM	**Experiences With Materials Information Management Systems For ICME: The Importance Of Metadata** W. Marsden; S. Warde; E. Cope; D. Debon
11:00-11:30 AM	**Structure Genome: Fill the Gap between Materials Genome and Structural Analysis** W. Yu
11:30-12:00 PM	**Microstructural Influence on Deformation and Fatigue Life of Composites Using the Generalized Method of Cells** S.M. Arnold; P.L. Murthy; B.A. Bednarcyk; E.J. Pineda
9:30 AM-12:30 PM, Tallahassee 3, **STR-03. Space Structures**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Jeanette Domber, Ball Aerospace & Technologies Corporation; Co-Chair: Aditi Chattopadhyay, Arizona State University	
9:30-10:00 AM	**A technique to evaluate on-orbit thermal deformation for large precise structures in ASTRO-H** T. Kawano; K. Ishimura; K. Minesugi; K. Omagari; K. Tanaka
10:00-10:30 AM	**Finite Element Analysis of the Inflatable Re-Entry Vehicle Experiment (IRVE)** L. Li; K. Gonyea; R.D. Braun
10:30-11:00 AM	**MOIRE Strongback Thermal Stability Analysis and Test Results** D. Waller; J.L. Domber; B. Belnap; R. Rynders; R. Schweickart
11:00-11:30 AM	**Design and Testing of Deployable Carbon Fiber Booms for CubeSat Non-Gossamer Applications** S.T. West; C. White; C. Celestino; S. Philpott; M. Pankow
11:30-12:00 PM	**Blossoming of Coiled Deployable Booms** A.L. Hoskin
9:30 AM-12:30 PM, Sun Ballroom B, **TP-01. Aerothermodynamics I** , Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Matthew Borg, Air Force Research Laboratory; Co-Chair: Thomas Schwartzentruber, University of Minnesota	
9:30-10:00 AM	**Aerothermal Environment and Thermal Response of Supersonic Inflatable Decelerators** S. Muppidi; R. Tanimoto; D. Bose; C. Tang; I.G. Clark

10:00-10:30 AM	**Boundary Layer Transition and Trip Effectiveness on an Apollo Capsule in the JAXA High Enthalpy Shock Tunnel (HIEST) Facility** L. Kirk; R.P. Lillard; J. Olejniczak; H. Tanno
10:30-11:00 AM	**LES Computation of Turbulent Heat Flux on Reentry Capsule Afterbody with Forced Transition** T. Ishihara; Y. Ogino; N. Ohnishi; H. Tanno
11:00-11:30 AM	**Numerical Investigation of Geometric Effects of Stardust Return Capsule Heat Shield** H. Weng; A. Martin
11:30-12:00 PM	**Tangential Blowing to a Supersonic Flow on a Blunted Nose** I. Egorov; E.B. Vasilevskii; A.V. Novikov; I.V. Ezhov
12:00-12:30 PM	**NASA Langley Experimental Aerothermodynamic Contributions to Slender and Winged Hypersonic Vehicles** S.A. Berry; K.T. Berger
9:30 AM-12:30 PM, Emerald 4, **WE-01. Wind Energy Aerodynamics and Aeroacoustics I,** Technical Paper, **33rd Wind Energy Symposium,** Chair: Matthew Churchfield, National Renewable Energy Laboratory; Co-Chair: Anshul Mittal, The University of Tennessee at Chattanooga	
9:30-10:00 AM	**Modeling Wind Turbine Tower and Nacelle Effects within an Actuator Line Model** M.J. Churchfield; S. Lee; S. Schmitz; Z. Wang
10:00-10:30 AM	**Development and Validation of a New Blade Element Momentum Skewed-Wake Model within AeroDyn** A. . Ning; G. Hayman; R. Damiani; J.M. Jonkman
10:30-11:00 AM	**Improvements to the Actuator Line Modeling for Wind Turbines** A. Mittal; K. Sreenivas; L.K. Taylor; L. Hereth
11:00-11:30 AM	**Modeling and Simulation of a 3MW Wind Turbine Blade for Determination and Analysis of Flow Characteristics** A.A. Raina; K. Wetzel; S. Farokhi
11:30-12:00 PM	**Validation of a High-Order Implicit LES Solver for the Simulation of a Low-Reynolds-Number Vertical-Axis Wind Turbine** S. Kanner; P. Persson
9:30 AM-12:30 PM, Emerald 6, **WE-02. Wind Farm and Turbine Wake Interactions I,** Technical Paper, **33rd Wind Energy Symposium,** Co-Chair: Jonathon Baker, Frontier Wind; Chair: Francesco Grasso, Energy Research Center of the Netherlands (ECN)	
9:30-10:00 AM	**Preliminary Field Test of the Wind Turbine Wake Imaging System** T. Herges; D.C. Maniaci; D. Bossert; R. Schmitt; B. Naughton
10:00-10:30 AM	**A Study of Intensified Wake Deflection by Multiple Yawed Turbines based on Large Eddy Simulations** L. Luo; N. Srivastava; P. Ramaprabhu
10:30-11:00 AM	**System Identification of a Wind Turbine Array** J. Annoni; K.B. Howard; P.J. Seiler; M. Guala

11:00-11:30 AM	**On the feasibility of using porous discs for wind tunnel simulations of wind farm power variation with turbine layout** R. Theunissen; C.B. Allen; P. Housley
11:30-12:00 PM	**Turbulent mixing in wind turbine and actuator disc wakes: experiments and POD analysis** L. Lignarolo; D. Ragni; C. Simao Ferreira; G. van Bussel
12:00-12:30 PM	**Computational Simulation of the Interaction Between Tandem Wind Turbines with Offset** K. Sreenivas; A. Mittal; L. Hereth; L.K. Taylor
11:00 AM-12:30 PM, Osceola Ballroom 4, **SCS-01. Spacecraft Booms and Trusses**, Technical Paper, **2nd AIAA Spacecraft Structures Conference**, Chair: Joseph Blandino, Virginia Military Institute; Co-Chair: Jonathan Hinkle, ILC Dover	
11:00-11:30 AM	**Application of a Novel Long-Reach Manipulator Concept to Asteroid Redirect Missions** J. Dorsey; W.R. Doggett; T.C. Jones; B. King
11:30-12:00 PM	**Embedding High Performance Electrical Conductors in Space-Based Deployable Composite Structures** B. Davis; W. Francis; M. Hulse; P. Keller; D. Campbell; G. Freebury
12:00-12:30 PM	**Simulation of Locking Space Truss Deployments** D. Van Dyne; A.L. Jennings; J. Black
12:30 PM-2:00 PM, Osceola Ballroom CD, **LUNCH-01. Durand Lectureship and Public Policy Luncheon** **Making an Impact in Public Service**, Lunch, **Forum**	
2:00 PM-5:30 PM, Miami 2, **AA-02. Jet Noise Measurements I**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Krishan Ahuja, Georgia Institute of Technology	
2:00-2:30 PM	**Turbulence Measurements of Rectangular Nozzles with Bevel** J.E. Bridges; M.P. Wernet
2:30-3:00 PM	**An Empirical Jet-Surface Interaction Noise Model with Temperature and Nozzle Aspect Ratio Effects** C.A. Brown
3:00-3:30 PM	**Characterization of a Supersonic Rectangular Jet over a Range of Test Conditions** G.M. Valentich; T.B. Davis; R. Kumar; F.S. Alvi; M. Alphonso; C. Harris
3:30-4:00 PM	**Noise Reduction in Supersonic Jets from Rectangular Convergent-Divergent Nozzles** R.W. Powers; D.K. McLaughlin; P.J. Morris
4:00-4:30 PM	**Exploring Physics and Control of Twin Supersonic Circular Jets** J.D. Cluts; C. Kuo; M. Samimy
4:30-5:00 PM	**Investigation of a Heated Supersonic Jet Chevrons Nozzle** P.A. Mora ; J.F. Kastner; E.J. Gutmark; K. Kailasanath

2:00 PM-5:30 PM, Captiva 1, **AFM-03. AFM Best Student Paper Competition II**, Technical Paper, **AIAA Atmospheric Flight Mechanics Conference**, Chair: Michael Grant, Purdue University	
2:00-2:30 PM	**Black-box LTI modelling of flapping-wing micro aerial vehicle dynamics** S.F. Armanini; C.C. de Visser; G. de Croon
2:30-3:00 PM	**Aerodynamic Modeling and Optimization of Sideslip Perching Maneuver** M. Alikhan; T.H. Go
2:00 PM-5:30 PM, Captiva 2, **AFM-04. Aircraft Flight Dynamics, Handling Qualities and Performance II**, Technical Paper, **AIAA Atmospheric Flight Mechanics Conference**, Chair: D. Bruce Owens, NASA-Langley Research Center; Co-Chair: M Christopher Cotting, US Air Force Test Pilot School	
2:00-2:30 PM	**Subset Simulation for Estimating Small Failure Probabilities of an Aerial System Subject to Atmospheric Turbulences** D. Löbl; F. Holzapfel
2:30-3:00 PM	**Symmetric Steady Flapping Flight of Bird-Scale Aircraft, Using Bifurcation and Continuation Method** A.A. Paranjape
3:00-3:30 PM	**Brain Control of Horizontal Airplane Motion – A Comparison of Two Approaches** T. Fricke; V. Paixão; N. Loureiro; R.M. Costa; F. Holzapfel
3:30-4:00 PM	**Exposing Unique Pilot Behaviors from Flight Test Data** D.H. Klyde; P.C. Schulze; P.M. Thompson
4:00-4:30 PM	**Model Order Reduction for Control Design of Flexible Free-Flying Aircraft** N.D. Tantaroudas; A. Da Ronch; K.J. Badcock; Y. Wang; R. Palacios
4:30-5:00 PM	**Improved Models for the Ground Handling Assessment of Navy Aircraft** D.H. Klyde; T. Myers; A.K. Lampton; M. Draper-Donley; M. Bishop
2:00 PM-5:30 PM, Destin 1, **APA-05. Aerodynamic Testing: Wind Tunnel & Flight Testing I**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Gregory Gatlin, ; Co-Chair: John Lin, NASA-Langley Research Center	
2:00-2:30 PM	**Unsteady Pressures on a Generic Capsule Shape** J.C. Ross; N. Burnside
2:30-3:00 PM	**Investigation of the Unique Stability Characteristics of the NASA Maraia Reentry Vehicle** J. Hunt; C. Shannon; T.R. Yechout
3:00-3:30 PM	**Aerodynamic Evaluation of a Capsule Shaped Projectile during Free Flight Testing with Ballistic Range** A. Ishida; H. Nagai; H. Tanno; T. Komuro

3:30-4:00 PM	**Investigation of Model Scale on Wind Tunnel Measurements of Ship Air Loads and Air Wake** N. Rosenfeld; K. Kimmel; A.J. Sydney
4:00-4:30 PM	**Wind Tunnel Testing of Unconventional Airships Docking In-Flight and Conceptual Design of Docking Mechanism** A. Kaluvan; P. Marzocca; A. Ceruti; W. Lacarbonara
4:30-5:00 PM	**Scaled Cascade Test in 6x6 Inch Flow Duct** J.M. Locke
5:00-5:30 PM	**Evaluating an Experimental Streamlined Fairing for a Diverter Less Supersonic Inlet (DSI) Equipped Aircraft** J. Masud; O. Khan
2:00 PM-5:30 PM, Destin 2, **APA-06. Aerodynamic-Structural Dynamics Interaction I**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Joao Luiz Azevedo, ; Co-Chair: Lawrence Ukeiley, University of Florida	
2:00-2:30 PM	**Aeroelastic Response of a Finite Span NACA 0018 Wing Part 1: Experimental Measurements** J.A. Farnsworth; S. Corbett; J. Seidel; T.E. McLaughlin
2:30-3:00 PM	**Aeroelastic Response of a Finite Span NACA 0018 Wing Part 2: Computational Simulations** C.P. Fagley; J. Seidel; T.E. McLaughlin
3:00-3:30 PM	**Comprehensive Simulation Evaluation of the AGARD 445.6 Weakened Model #3 from a Test and Evaluation Perspective** J.A. Lechniak; K.K. Bhamidipati; D.A. Reasor; K. Margosian; C.L. Pasiliao
3:30-4:00 PM	**On an innovative approach to account for gust aerodynamic non-linearities in an industrial context** D. Quero-Martin; G. Jenaro-Rabadan
4:00-4:30 PM	**Static Aeroelastic Predictions for Complex Aircraft Configurations with CFD/CSD Coupling Methodology** G. Wang; H. Mian; X. Shan; J. Lee
4:30-5:00 PM	**Aerodynamic Performance of Flexible Flapping Wings at Bumblebee Scale in Hover Flight** M. Sridhar; C. Kang
5:00-5:30 PM	**Fluid Structure Interaction on a Flexible Micro Air Vehicle** J.Z. Chen; N. Qin
2:00 PM-5:30 PM, Naples 1, **APA-07. Unsteady Aerodynamics**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Kirk Vanden, USAF; Co-Chair: Vishal Bhagwandin, US Army Research Laboratory	
2:00-2:30 PM	**Numerical Investigation of the Aerodynamics of an Airfoil in Mutational Ground Effect** Q. Qu; P. Zuo; W. Wang; P. Liu; R.K. Agarwal
2:30-3:00 PM	**Propulsion Theory of Flapping Airfoils, Comparison with Computational Fluid Dynamics** D.F. Hunsaker; W.F. Phillips
3:00-3:30 PM	**Implications of boundary layer establishment on convective heat transfer experiments** J. Saavedra; S. Lavagnoli; G. Paniagua

3:30-4:00 PM	**An Attempt to Improve Prediction Capability of Transonic Buffet Using URANS** T. Izumi; Y. Ogino; K. Sawada
4:00-4:30 PM	**Reduced-Order Modeling of Continuous-Time State-Space Unsteady Aerodynamics** E. Gillebaart; R. De Breuker
4:30-5:00 PM	**Unsteady Force and Flow Features of Single and Tandem Wheels** S. Spagnolo; X. Zhang; Z. Hu; O. Stalnov; D. Angland
2:00 PM-5:30 PM, Naples 2, **APA-08. Special Session: Aerodynamic Design Optimization of Benchmark Cases I**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Sivakumaran Nadarajah, ; Co-Chair: Stephen LeDoux, Boeing Engineering Operations & Technology	
2:00-3:00 PM	**A Study Based on the AIAA Aerodynamic Design Optimization Discussion Group Test Cases Using Adjoint Methods** A. Jameson; J.C. Vassberg
3:00-3:30 PM	**Aerodynamic Shape Optimization of Benchmark Problems Using Jetstream** C. Lee; D. Koo; K. Telidetzki; H. Buckley; H. Gagnon; T. Reist; D.W. Zingg
3:30-4:00 PM	**Gradient-Based Single and Multi-points Aerodynamic Optimizations with the elsA Software** M. Meheut; D. Destarac; S. Ben Khelil; G. Carrier; A. Dumont; J. Peter
4:00-4:30 PM	**Multipoint Aerodynamic Shape Optimization Investigations of the Common Research Model Wing** G.K. Kenway; D.A. Burdette; J. Martins
4:30-5:00 PM	**Application of Physics-Based Surrogate Models to Benchmark Aerodynamic Shape Optimization Problems** L.T. Leifsson; S. Koziel; Y. Tesfahunegn; S. Hosder; J. Gramanzini
2:00 PM-5:30 PM, Osceola Ballroom 6, **AS-01. Aerodynamics of Adaptive Structures**, Technical Paper, **23nd AIAA/AHS Adaptive Structures Conference**, Chair: Inderjit Chopra, University of Maryland; Co-Chair: Mark Balas, Embry-Riddle Aeronautical University	
2:00-2:30 PM	**Adaptive Vortex Generator Structures for the Reduction of Turbulent Separation** M. Garland; M.J. Santer; J.F. Morrison
2:30-3:00 PM	**Electro-aeromechanical modelling and feedback control of actuated membrane wings** S. Buoso; R. Palacios
3:00-3:30 PM	**A framework for the aeroelastic analysis and design of generic morphing wings** N. Werter; R. De Breuker
3:30-4:00 PM	**Numerical and experimental investigation of aero-structural characteristics and performance of distributed compliance morphing wings** G. Molinari; A.F. Arrieta; P. Ermanni
4:00-4:30 PM	**Adaptive Kagome Lattices for Near Wall Turbulence Suppression** J.W. Bird; M.J. Santer; J.F. Morrison

4:30-5:00 PM	**Aerodynamic Characterization of a Continuous Trailing Edge Flap Design** T.C. Mapes; M. Agate
5:00-5:30 PM	**Unsteady aerodynamic optimization of the camber of a morphing airfoil for rotorcraft blades** A. Cortesi; F. Fusi; G. Quaranta
2:00 PM-5:30 PM, Tallahassee 1, **FD-07. Boundary Layer Transition: Roughness and 3D Flow Effects**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Bradley Wheaton, The Johns Hopkins University Applied Physics Laboratory; Co-Chair: Katya Casper, Sandia National Laboratories	
2:00-2:30 PM	**The Interaction of a Backward-Facing Step and Crossflow Instabilities in Boundary-Layer Transition** J.L. Eppink; R. Wlezien; R.A. King; M.M. Choudhari
2:30-3:00 PM	**Direct Numerical Simulation of Roughness-Induced Transition in the VKI Mach 6 Tunnel** R.S. Chaudhry; P.K. Subbareddy; I. Nompelis; G.V. Candler
3:00-3:30 PM	**A Study of the Impact of Wide-Range Roughness Elements on Gortler Instabilities** A. Sescu; R. Pendyala; J. Haywood; M.R. Visbal
3:30-4:00 PM	**Pressure Gradient Effect on Boundary Layers over Surface Excrescences: Parametric Study** J. Haywood; A. Sescu; M.R. Visbal
4:00-4:30 PM	**Experimental Investigation of the Effect of Wall Suction on Cross-Flow Absolute Instability in a Rotating Disk Boundary Layer** J. Ho; T.C. Corke; E. Matlis
4:30-5:00 PM	**Freestream Effects on Boundary Layer Disturbances for HIFiRE-5** M.P. Borg; R.L. Kimmel; J.W. Hofferth; R.D. Bowersox; C.L. Mai
5:00-5:30 PM	**Analysis of Crossflow Instability on HIFiRE-5 using Direct Numerical Simulation** D.J. Dinzl; G.V. Candler
2:00 PM-5:30 PM, Sanibel 1, **FD-08. CFD Methods II**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Haoxiang Luo, Vanderbilt University; Co-Chair: Roger Davis, University of California Davis	
2:00-2:30 PM	**Computation of the Tangent-Linear Solution for LCO-Converged Nonlinear Flows** S. Xu; J. Hückelheim; M. Gugala; J. Müller
2:30-3:00 PM	**Structural Dynamics Solution Procedure for Multi-Discipline Fluid/Structure/Thermal Simulation** J.E. Zorn; R.L. Davis
3:00-3:30 PM	**hp-adaptive time integration for ALE simulation of Fluid-Structure Interaction problems** A. Hay; S. Etienne; D. Pelletier; A. Garon
3:30-4:00 PM	**A Tensor Decomposition Method for High Dimensional Fokker-Planck Equation Modeling Polymeric Liquids** Y. Sun; M. Kumar
4:00-4:30 PM	**Comparison of Artificial Dissipation and Filtering Schemes for Time-Accurate Simulations** A. Edoh; A.R. Karagozian; C. Merkle

4:30-5:00 PM	**On The Extension of SLAU Scheme to Compressible Two-Fluid Models** Z. Hosseinzadeh-Nik; J.D. Regele; A. Passalaqua
5:00-5:30 PM	**CFD for prediction of flow separation on aircraft tail surfaces** A. Masi; J. Benton; P.G. Tucker
2:00 PM-5:30 PM, Sanibel 2, **FD-09. Experimental and Numerical Investigations of Blunt Leading Edge Separation for a 53 Degree Swept Diamond Wing (STO AVT-183) II (Invited),** Technical Paper, **53rd AIAA Aerospace Sciences Meeting,** Co-Chair: Arthur Rizzi, KTH Royal Institute Technology; Co-Chair: James Luckring, NASA-Langley Research Center	
2:00-2:30 PM	**Applicability of Hybrid RANS/LES Models in Predicting Separation Onset of the AVT-183 Diamond Wing** D.A. Reasor; D.J. Malloy; D. Daniel
2:30-3:00 PM	**Numerical Analysis of Incipient Separation on 53-Deg Swept Diamond Wing** N.T. Frink
3:00-3:30 PM	**Vortex Development on the AVT-183 Diamond Wing Configuration - Numerical and Experimental Findings** S.M. Hitzel; O.J. Boelens; A. Hövelmann
3:30-4:00 PM	**Numerical study of blunt leading edge separation on a 53 degree swept diamond wing (STO AVT-183) using the Edge and Cobalt flow solvers** H. Edefur; M. Tormalm; R.K. Nangia
4:00-4:30 PM	**CFD Study of Vortex Separation Phenomena on Blunt Diamond Wing** M.M. Tomac; A.W. Rizzi
4:30-5:00 PM	**Vortical Flow Prediction of the AVT-183 Diamond Wing** M. Ghoreyshi; K.J. Ryszka; R.M. Cummings; A.J. Lofthouse
2:00 PM-5:30 PM, Daytona 1, **FD-10. High-Order Methods I,** Technical Paper, **53rd AIAA Aerospace Sciences Meeting,** Co-Chair: Chunlei Liang, George Washington University; Co-Chair: Xinfeng Gao, Colorado State Univ	
2:00-2:30 PM	**Results and Conclusions of the European Project IDIHOM on High-Order Methods for Industrial Aerodynamic Applications** N. Kroll; T. Leicht; C. Hirsch; F. Bassi; C. Johnston; K. Sorensen; K. Hillewaert
2:30-3:00 PM	**Higher-Order Methods for Compressible Turbulent Flows Using Entropy Variables** L.T. Diosady; S.M. Murman
3:00-3:30 PM	**Implementation of Turbulence Models to High-Order Spectral Difference Method** H. Fan; J. Gao
3:30-4:00 PM	**Hybrid Spectral Difference/Embedded MPWENO Method for Conservation Laws** J.J. Choi
4:00-4:30 PM	**A High-Order Finite-Volume Method for Compressible Flows on Moving Tetrahedral Grids** M.R. Charest; T. Canfield; N. Morgan; J. Waltz; J. Wohlbier

4:30-5:00 PM	**A Fourth-Order Scheme for the Compressible Navier-Stokes Equations** X. Gao; S. Guzik
2:00 PM-5:30 PM, Daytona 2, **FD-11. Jet Flows and Control**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: Datta Gaitonde, The Ohio State University; Co-Chair: Christian Paschereit, Technical University of Berlin	
2:00-2:30 PM	**Active Control of Mach 0.9 Jet Using High Frequency Excitation** P. Upadhyay; T.B. Davis; F.S. Alvi
2:30-3:00 PM	**LES Simulation of Forced High-Speed Jet** J. Kim
3:00-3:30 PM	**Contrasting Modal Decompositions of Flow Fields with & without Control** D.R. Gonzalez; A.T. Mohan; D.V. Gaitonde; M.J. Lewis
3:30-4:00 PM	**The influence of the inner shear layer on the suppression of the global mode in heated swirling jets** L. Rukes; M. Sieber; K. Oberleithner; C. Nayeri; C.O. Paschereit
4:00-4:30 PM	**Effects of Shear Layer Manipulation on Noise Emissions of a Turbulent Jet Flame** H. Nawroth; C.O. Paschereit
4:30-5:00 PM	**Measurement and Prediction of Hot Streak Profiles Generated by Axially Opposed Dilution Jets** R. Prenter; A. Ameri; J.P. Bons
2:00 PM-5:30 PM, Sun Ballroom A, **FD-12/PDL-01. Plasma Flow Control**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: Donald Rizzetta, USAF; Co-Chair: Thomas McLaughlin, US Air Force Academy	
2:00-2:30 PM	**Plasma-Based Control of Transition on a Wing with Leading-Edge Excrescence** D.P. Rizzetta; M.R. Visbal
2:30-3:00 PM	**Numerical Investigation on the Efficiency of a Plasma Actuator for Turbine Applications** G. Bell; H. Ogawa; S. Watkins
3:00-3:30 PM	**Design Exploration of a DBD Plasma Actuator for Massive Separation Control** T. Watanabe; H. Aono; T. Tatsukawa; T. Nonomura; A. Oyama; K. Fujii
3:30-4:00 PM	**LES of Separated-flow Controlled by DBD Plasma Actuator around NACA 0015 over Reynolds Number Range of 10^4-10^6** M. Sato; K. Okada; H. Aono; K. Asada; A. Yakeno; T. Nonomura; K. Fujii
4:00-4:30 PM	**Parametric investigation on plasma streamwise vortex generators with flow around the bluff body** J. Yoon; J. Han
4:30-5:00 PM	**Active flow control by means of MHD plasma actuator on a NACA 23012 Airfoil Model** I. Moralev; V.A. Bityurin; A. Klimov; P. Kazanskiy
2:00 PM-5:30 PM, Sanibel 3, **FD-13. RANS/LES Applications**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Nicholas Georgiadis, NASA Glenn Research Center; Co-Chair: Jasim Ahmad, NASA	

2:00-2:30 PM	**RANS and LES/RANS Simulations of Flow Over an Dynamically Pitching Naca0012 Airfoil** J. Ke; J.R. Edwards
2:30-3:00 PM	**Use of Symbolic Regression for construction of Reynolds-stress damping functions for Hybrid RANS/LES** J. Weatheritt; R.D. Sandberg
3:00-3:30 PM	**OpenFOAM Simulations of Atmospheric-Entry Capsules in the Subsonic Regime** B.E. Nikaido; S.M. Murman; J. Garcia
3:30-4:00 PM	**Evaluation of Industry Standard Turbulence Models on an Axisymmetric Supersonic Compression Corner** J.R. DeBonis
4:00-4:30 PM	**Flow Past Tandem Circular Cylinders at High Reynolds Numbers using Overset Grids in OpenFOAM** H. Gopalan; R. Jaiman; D.D. Chandar
4:30-5:00 PM	**Revisiting Turbulence Model Validation for High-Mach Number Axisymmetric Compression Corner Flows** N.J. Georgiadis; C.L. Rumsey; G.P. Huang
5:00-5:30 PM	**Numerical Accuracy in RANS Computations of High-Lift Multi-element Airfoil and Aicraft Configurations** D. Drikakis; P. Tsoutsanis; A.F. Antoniadis
2:00 PM-5:30 PM, Sun Ballroom C, **Status/Progress of Environmentally Responsible Aviation Project**	
4:00-5:00 PM	**Panel discussion**
2:00-2:30 PM	**Status of ERA Airframe Technology Demonstrators** P. Davis; D.C. Jegley; T. Rigney
2:30-3:00 PM	**Environmentally Responsible Aviation: Status of Propulsion Technology Demonstrators** K.L. Suder; D.E. Van Zante; M.L. Celestina; C.E. Hughes; C. Lee
3:00-3:30 PM	**Status of ERA Vehicle System Integration Technology Demonstrators** J.D. Flamm; H. Fernandez; M.R. Khorrami; K.D. James; R.H. Thomas
3:30-4:00 PM	**Assessment of System Level Technical Performance and Impact of NASA's Environmentally Responsible Aviation (ERA) Project's Integrated Technology Demonstrations (ITDs)** C.L. Nickol
2:00 PM-5:30 PM, Sun Ballroom 3, **GNC-06. Aerospace Robotics and Autonomous/Unmanned Systems II**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Chair: Jurek Sasiadek, Carleton University; Co-Chair: David Perez	
2:00-2:30 PM	**CubeSat Autonomous Rendezvous Simulation** E. Lightsey; A.J. Fear
2:30-3:00 PM	**Optimal Power Descent Guidance with 6-DoF Line of Sight Constraints via Unit Dual Quaternions** U. Lee; M. Mesbahi

3:00-3:30 PM	**Dynamics and Control of Flexible Manipulators Using Variable-Speed Control Moment Gyros** Q. Hu; Z. Wang; J. Zhang
3:30-4:00 PM	**Long-range Navigation using Solar Panels Characteristics and Angle-of-Arrival for Planetary Rover Cooperating with Landers** T. Ishida; M. Takahashi
4:00-4:30 PM	**Methods for Modeling Tensegrity Dynamics in LEO** M.C. Rye; C. Sultan
4:30-5:00 PM	**M-MRAC for SPHERES** V. Stepanyan; J. Barlow; K.S. Krishnakumar
2:00 PM-5:30 PM, Miami 1, **GNC-07. Lander Technology Development at NASA I**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Chair: John Carson, NASA Jet Propulsion Laboratory; Co-Chair: Ed Robertson, NASA Johnson Space Center	
2:00-2:30 PM	**Developing Autonomous Precision Landing and Hazard Avoidance Technology from Concepts through Terrestrially Flight-Tested Prototypes** C. Epp; E. Robertson; J.M. Carson
2:30-3:00 PM	**Interfacing and Verifying ALHAT Safe Precision Landing Systems with the Morpheus Vehicle** J.M. Carson; R.L. Hirsh; J.L. Busa; C.Y. Villalpando; K. Martin; N. Trawny; V.E. Roback; D.F. Pierrottet; G.D. Hines
3:00-3:30 PM	**Flight testing a Real-Time Hazard Detection System for Safe Lunar Landing on the Rocket-Powered Morpheus Vehicle** N. Trawny; A. Huertas; M.E. Luna; C.Y. Villalpando; K. Martin; J.M. Carson; A.E. Johnson; C. Restrepo; V.E. Roback
3:30-4:00 PM	**Simulations of the Hazard Detection System for Approach Trajectories of the Morpheus Lunar Lander** M.E. Luna; A. Huertas; N. Trawny; C.Y. Villalpando; K. Martin; W. Wilson; C. Restrepo
4:00-4:30 PM	**Lidar Sensor Performance in Closed-Loop Flight Testing of the Morpheus Rocket-Propelled Lander to a Lunar-Like Hazard Field** V.E. Roback; D.F. Pierrottet; F. Amzajerdian; B.W. Barnes; A.E. Bulyshev; G.D. Hines; L.B. Petway; P.F. Brewster; K.S. Kempton
4:30-5:00 PM	**Advancing Lidar Sensors Technologies for Next Generation Landing Missions** F. Amzajerdian; D.F. Pierrottet; G.D. Hines; V.E. Roback; L.B. Petway; B.W. Barnes; P.F. Brewster; A.E. Bulyshev
5:00-5:30 PM	**Morpheus Lander Roll Control System and Wind Modeling** E.A. Gambone
2:00 PM-5:30 PM, Sun Ballroom 4, **GNC-08. GNC Sensor Systems II**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Chair: Scott Starin, NASA-Goddard Space Flight Center; Co-Chair: Tae Lim, US Naval Academy	

2:00-2:30 PM	**A New Method for Calibrating an Angular Accelerometer Using a High -Precision Calibration Table** D. Jatiningrum; P. Lu; C.C. de Visser; Q. Chu; M. Mulder
2:30-3:00 PM	**Design and Development of a Laser Fine Pointing Sensor** F. Ales; P. Gath; U. Johann; O. Mandel; C. Braxmaier
3:00-3:30 PM	**Feature Detection for Pose Estimation** T.W. Lim; M. ODowd; P. Ramos
3:30-4:00 PM	**Tool for Optimizing Star Tracker and IMU Configuration** E.D. Hariton; A. Swank
4:00-4:30 PM	**Improvement of Infrared Horizon Detector Using Two-dimensional Infrared Temperature Distribution Model** L. Xu; H. Chen
4:30-5:00 PM	**LIRIS demonstrator on ATV5: a step beyond for European non cooperative navigation system** B. Cavrois; A. Vergnol; A. Donnard; P. Casiez; O. Mongrard
2:00 PM-5:00 PM, Sun Ballroom 6, **GNC-09. Missile Guidance II**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Chair: Moshe Idan, Technion - Israel Institute of Technology; Co-Chair: Anton Vanderwyst, Raytheon Missile Systems	
2:00-2:30 PM	**Cooperative Aircraft Defense from an Attacking Missile using Proportional Navigation** E. Garcia; D. Casbeer; K.D. Pham; M. Pachter
2:30-3:00 PM	**Bounded Differential Game Guidance Law with Dual Control Systems for Agile Missiles** D. Taur
3:00-3:30 PM	**Lateral Interception of Maneuvering Targets Using Dubins Paths** A. G; A. Ratnoo; D. Ghose
3:30-4:00 PM	**Optimal Paths for Lateral Interception of Moving Targets using a Dubins Approach** A. G; A. Ratnoo; D. Ghose
4:00-4:30 PM	**An SDRE Based Differential Game Approach for Maneuvering Target Interception** R. Bardhan; D. Ghose
2:00 PM-5:30 PM, Sun Ballroom 5, **GNC-10. Novel Navigation, Estimation, and Tracking Methods II**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Chair: Nisar Ahmed; Co-Chair: Mrinal Kumar, University of Florida	
2:00-2:30 PM	**Automated 3D Digital Reconstruction of Fiber Reinforced Polymer Composites** W. Whitacre; M. Czabaj
2:30-3:00 PM	**A Novel IEG Strategy for Realistically Modeled Seeker-less Interceptors** S.K. Gour; D. Ghose; V. Aki

3:00-3:30 PM	**Line of Sight Rate Estimation for Guided Projectiles with Strapdown Seekers** J.M. Maley
3:30-4:00 PM	**Calibration of Atmospheric Density Model Using Orbital Data of Multiple Satellites** Y. Ren; J. Shan
4:00-4:30 PM	**Position Based Visual Servoing in an Indoor Simulation Platform** H. Zhu; H.H. Liu
4:30-5:00 PM	**Multiple UAV Target Tracking Using Consensus-Based Distributed High Degree Cubature Information Filter** T. Sun; M. Xin
2:00 PM-5:30 PM, Emerald 1, **GTE-02. Film Cooling** , Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Sundaresa Subramanian, QuEST Global, Inc.	
2:00-2:30 PM	**Development of Novel Internal Cooling Geometry for Gas Turbine Blades** I.S. Ranade; E. Guillen; D. Bystry-Wells; J. Gutierrez; Y. Mehta; A. Dias dos Santos; M. Ricklick
2:30-3:00 PM	**Experimental and Numerical Study of Deposition in Pin Fin Arrays with Impingement Cooling Jets** D. Zagnoli; R. Prenter; A. Ameri; J.P. Bons
3:00-3:30 PM	**Effects of Hole Configuration, Surface Curvature, and Mach Number on Film Cooling in Fuel Rich Environments** A.J. Lynch; A.T. Shewhart; M.D. Polanka; J. Rutledge
3:30-4:00 PM	**Rib Shape Effects on Heat Transfer Performance in Internal Cooling Passages** Y. Dai; J.C. Tyacke; P.G. Tucker
4:00-4:30 PM	**An Experimental Study of Compressibility Effects on the Film Cooling Effectiveness Using PSP and PIV Techniques** H. Hu; W. Zhou; B. Johnson
2:00 PM-5:30 PM, Emerald 8, **HSABP-02. Premixed High Speed Combustion (Invited)**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: James McDaniel, University of Virginia; Co-Chair: Christopher Goyne, University of Virginia	
2:00-2:30 PM	**Development of a Premixed Combustion Capability for Dual-Mode Scramjet Experiments (Invited)** R.D. Rockwell; C.P. Goyne; H.K. Chelliah; J.C. McDaniel; J.R. Edwards; A.D. Cutler; P.M. Danehy
2:30-3:00 PM	**Thermal and Chemical Kinetic Analysis of a High-speed Reacting Flow in a Variable Area Duct (Invited)** M.J. Rahimi; H.K. Chelliah
3:00-3:30 PM	**Nitric Oxide PLIF Visualization of Simulated Fuel-Air Mixing in a Dual-Mode Scramjet (Invited)** L. Cantu; E. Gallo; A.D. Cutler; B.F. Bathel; P.M. Danehy; R.D. Rockwell; C.P. Goyne; J.C. McDaniel
3:30-4:00 PM	**Coherent Anti-Stokes Raman Spectroscopy (CARS) in a Dual-Mode Scramjet with Premixed Fueling (Invited)** E. Gallo; L. Cantu; A.D. Cutler; P.M. Danehy; R.D. Rockwell; C.P. Goyne; J.C. McDaniel

4:00-4:30 PM	**Velocimetry Using Graphite Tracer Particles in a Scramjet Flowpath (Invited)** J.W. Kirik; C.P. Goyne; J.C. McDaniel; R.D. Rockwell; R.F. Johnson; H.K. Chelliah
4:30-5:00 PM	**Large Eddy Simulation of High-Speed, Premixed Ethylene Combustion (Invited)** K. Ramesh; J.R. Edwards; C.P. Goyne; J.C. McDaniel
5:00-5:30 PM	**Direct Measurement of Combustion Efficiency of a Dual-Mode Scramjet via TDLAT and SPIV (Invited)** K.M. Busa; B. Rice; J.C. McDaniel; C.P. Goyne; R.D. Rockwell; J.R. Edwards
2:00 PM-5:30 PM, Osceola Ballroom 2, **IS-03. Intelligent Collaborative Control of Multi-Agent Systems**, Technical Paper, **AIAA Infotech @ Aerospace**, Co-Chair: Kevin Kochersberger, Virginia Polytechnic Institute and State University; Chair: Adnan Yucel, Lockheed Martin Aeronautics	
2:00-2:30 PM	**Decentralized Message Passing for Minimum Sensor Cover Based on Belief Propagation** D. Jang; H. Choi
2:30-3:00 PM	**Coordinating Groups of Sensing Platforms in Dynamic, Uncertain Environments** I.J. Sledge; K. Mohseni
3:00-3:30 PM	**Sensor Resource Management to Support UAS Integration into the National Airspace System** N. Hanlon; K. Cohen; E.H. Kivelevitch
3:30-4:00 PM	**An Intelligent, Heuristic Path Planner for Multiple Agent Unmanned Air Systems** C. Crispin; A. Sobester
4:00-4:30 PM	**Intelligent Water Drops Algorithm for Coordinating Activities Between Cluster Spacecraft in a Communications-Denied Environment** J. Straub
2:00 PM-5:30 PM, Osceola Ballroom 1, **IS-04. Making Aerospace Operations Intelligent**, Technical Paper, **AIAA Infotech @ Aerospace**, Chair: Christopher Bowman,	
2:00-2:30 PM	**Surveillance for Intelligent Emergency Response Robotic Aircraft (SIERRA)- VTOL Aircraft for Emergency Response** B. Brown; W. Wei; R. Ozburn; M. Kumar; K. Cohen
2:30-3:00 PM	**Multiobjective Design Exploration of a Many-objective Space Trajectory Problem for Low-Thrust Spacecraft Using MOEA with Large Populations** T. Tatsukawa; T. Watanabe; A. Oyama; K. Fujii
3:00-3:30 PM	**Abnormal Orbital Event Detection, Characterization, and Prediction** C.L. Bowman
3:30-4:00 PM	**GPS Scintillation Outage Prediction** C.L. Bowman
4:00-4:30 PM	**Helicopter Mission Assignment in Disaster Relief Based on Particle Swarm Optimization** A. Andreeva-Mori; K. Kobayashi; M. Shindo

4:30-5:00 PM	**A Scented Receding Horizon Approach to the Mars Surveyor Competition** S. Higgins; A. Stubblebine; T. Deshpande; E.H. Kivelevitch
5:00-5:30 PM	**A Cascading Fuzzy Logic Controller to the Mars Surveyor Competition** A. Stubblebine; S. Higgins; T. Deshpande; E.H. Kivelevitch
2:00 PM-5:30 PM, St. George 112, **ISC-02. International Student Conference (Masters Category)**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Jeffrey Corbets	
2:00-2:30 PM	**Characterization of Rotor Wake in Ground Effect** G.M. Perrotta
2:30-3:00 PM	**Comparison of Numerical Methods to Determine the Effect of Non-Equilibrium in Flows from the Laminar to Turbulent Regime** R.W. Bosworth
3:00-3:30 PM	**Complex Lamellar Helical Solution for Cyclonically Driven Hybrid Rocket Engines** J. Fleischmann; J. Majdalani
3:30-4:00 PM	**Particle In Cell (PIC) Algorithm Advancement for Plasma Modelling of an Ion Thruster Discharge Chamber** T.J. Godar; J. Menart
4:00-4:30 PM	**Aerial Deployed Unfolding Autonomous Glider System** A.J. Smith
4:30-5:00 PM	**Ground Testing of Active Thermal Tiles** R.K. Delaney; H. Dumm
5:00-5:30 PM	**Theoretical and Numerical Approaches for Impact Load Identification on an Aerospace Structure Correlation with Experimental Data** G. Fabbi
2:00 PM-5:30 PM, St. George 114, **ISC-03. International Student Conference (Team Category)**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: L. Jane Hansen, HRP Systems, Inc.	
2:00-2:30 PM	**Experimental and Computational Investigation of a Dual-Bell Nozzle** K. Davis; E. Fortner; M. Heard; H. McCallum; H. Putzke
2:30-3:00 PM	**Analysis of Different Design Strategies to Improve Single Blade Performance in Rotorcrafts** L.N. Gilkey; C. Echavarria; S. Gomez
3:00-3:30 PM	**Estimating Landing and Take-off Cycle Parameters Using MATLAB** J. Varney; P. Motevalli; D. Katsaduros; M. Prall; M.E. Johnson
3:30-4:00 PM	**Passive Turbulence Generating Grid Arrangements in a Turbine Cascade Wind Tunnel** C.J. Wiese; M.J. McClearn; G. Allevato; K.P. Rouser
4:00-4:30 PM	**L-Dominance: A New Mechanism Combining ε-Dominance and Pareto Knee Exploitation in Evolutionary Multi-objective Optimization** B. Hancock; T.B. Nysetvold; C.A. Mattson

4:30-5:00 PM	**Design of a Cost Effective Thrust Stand for Introducing Thrust and Impulse** E. Hopping; M. Murdy; N. Stepp
2:00 PM-3:00 PM, Osceola Ballroom A, **LEC-02. NDA Lecture: The Building Block Approach in the 21st Century - The Role of ICME & UQ**, Lecture, **17th AIAA Non-Deterministic Approaches Conference (non-paper sessions)**, Chair: Eric Tuegel, USAF; Co-Chair: Markus Rumpfkeil, University of Dayton	
2:00 PM-5:30 PM, Sarasota 1, **MAT-03. ICME Applications - Residual Stress Modeling and Measurement**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Co-Chair: John Matlik, Rolls-Royce Corp; Chair: Vasisht Venkatesh	
2:00-2:30 PM	**Uncertainty Quantification in ICMSE: Application to Metal Alloys** G. Cai; S. Mahadevan
2:30-3:00 PM	**Residual Stress Modeling and Uncertainty Quantification** R. Shankar; W. Wu; J. Yang; J. Oh
3:00-3:30 PM	**Probabilistic Modeling of Bulk Residual Stresses** J. McFarland; V. Bhamidipati; R. McClung; M. James; J. Watton; M. Hill; D.L. Ball
3:30-4:00 PM	**The Impact of Forging Residual Stress on Fatigue in Aluminum** D.L. Ball; M. James; R.J. Bucci; J. Watton; A. DeWald; M. Hill; C.F. Popelar; R. McClung
4:00-4:30 PM	**Residual Stress Measurements for Model Validation As Applied in the United States Air Force Foundational Engineering Problem Program on ICME of Bulk Residual Stress in Ni Rotors** C. Iuliana; V. Venkatesh
4:30-5:00 PM	**Repeatability of Residual Stress Measurements** A. DeWald
5:00-5:30 PM	**The Effect of Stochastically Varying Creep Parameters on Residual Stresses in Ceramic Matrix Composites** E.J. Pineda; B.A. Bednarcyk; S.K. Mital; S.M. Arnold
2:00 PM-5:30 PM, Sarasota 2, **MAT-04. Multi-Scale Modeling of Materials**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Samit Roy, The University of Alabama; Co-Chair: Gary Seidel, Virginia Polytechnic Institute and State Universit	
2:00-2:30 PM	**A Multiscale Model Coupling Molecular Dynamics Simulations and Micromechanics to Study the Behavior of CNT-Enhanced Nanocomposites** N. Subramanian; A. Rai; S. Datta; B. Koo; A. Chattopadhyay
2:30-3:00 PM	**Prediction of Progressive Damage at the Fiber/Matrix Scale Using Cohesive Zone Elements** M.K. Ballard; J.D. Whitcomb
3:00-3:30 PM	**A Micromechanics Approach to Homogenizing Damageable Elastoplastic Heterogeneous Materials** L. Zhang; W. Yu

3:30-4:00 PM	**Concurrent Multiscale Modeling of Coupling between Continuum Damage and Piezoresistivity in CNT-Polymer Nanocomposites** X. Ren; G.D. Seidel
4:00-4:30 PM	**A Micromechanical Approach to Imperfect Interface Analysis of Heterogeneous Materials** H.M. Sertse; W. Yu
4:30-5:00 PM	**Effect of Material Variability on Progressive Damage and Micromechanics of Composite Materials** J. Johnston; C.B. Heitland; A. Chattopadhyay
2:00 PM-5:30 PM, Sarasota 3, **MDO-03. MDO: Wing Design Applications**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Co-Chair: Timothy Takahashi, Arizona State University; Chair: Frode Engelsen, The Boeing Company	
2:00-2:30 PM	**Self-Designing Parametric Geometries** A. Sobester
2:30-3:00 PM	**Design Implications of Elliptical Planform Wings** D.J. Dulin; T.T. Takahashi
3:00-3:30 PM	**Adaptive Shape Control for Aerodynamic Design** G.R. Anderson; M.J. Aftosmis
3:30-4:00 PM	**Beyond Quasi-Analytical Methods for Preliminary Structural Sizing and Weight Estimation of Lifting Surfaces** A. Elham; M. van Tooren
4:00-4:30 PM	**Airfoil Optimization Based on Rapid Transition Prediction** X. Wang; J. Cai; C. Liu; Z. Hu
2:00 PM-5:30 PM, Sun Ballroom 2, **MST-04. Modeling of Space Systems and Dynamics**, Technical Paper, **AIAA Modeling and Simulation Technologies Conference**, Chair: Daniel Cartmell, Boeing Engineering Operations & Technology	
2:00-2:30 PM	**A New Approach to Simulating the Trajectory of Solar Sail Spacecraft Using the Finite Element Method** A.A. Karwas; R. Taghavi
2:30-3:00 PM	**Design of a Programmable Star Tracker-Based Reference System for a Simulated Spacecraft** W. Grunwald; E.D. Swenson
3:00-3:30 PM	**Formation Flying Constant Low-thrust Control Model Based on Relative Orbit Elements** X. Wang; Y. Rao; C. Han; Y. Shi
3:30-4:00 PM	**Using the DIMMACSS-PSG Intelligent Robotic Middleware to Control Real-World and Simulated Multi-Agent Systems** S.M. Walker; J. Shan
4:00-4:30 PM	**Modeling and Design of a Communication and Navigation Satellite Constellation for the Lunar South Pole** M.S. Surratt; M.T. Kezirian
4:30-5:00 PM	**A Framework for Calibrating Angular Accelerometers using a Motion Simulator** D. Jatiningrum; C.C. de Visser; M. van Paassen; M. Mulder

2:00 PM-5:30 PM, Gainesville 2, **MVC-02. Grid Quality Metrics Related to Solution Accuracy Including Real-World Configurations**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Kenneth Bryden, Ames Laboratory	
2:00-2:30 PM	**Grid Quality and Resolution Effects on the Aerodynamic Modeling of Parachute Canopies** M. Ghoreyshi; J. Seidel; K. Bergeron; A. Jirasek; A.J. Lofthouse; R.M. Cummings
2:30-3:00 PM	**On the quantification of errors of a pre-processing effort reducing contact meshing approach** A. Keskin; M. Kober; E. Stelldinger; A. Kuehhorn; H. Boehm; A. Hornig; W. Hufenbach
3:00-5:30 PM	**The Path to and State of Geometry and Meshing in 2030** **Current and emerging trends in HPC are providing transformational capabilities for Simulation Based Research and Development and Simulation Based Design. Numerous efforts are underway to provide Exascale systems in the next decades. HPC architectures are rapidly evolving and the tools and methods need to keep pace with both the scale and the evolving HW architecture. Emerging HPC capabilities provide potential for simulation of increasingly complex, multi-scale and multi-disciplinary applications for discovery, design and evaluation of aerospace systems. The computational mesh, along with the geometry that it represents, has a considerable impact on the quality, stability, and amount of resources required to complete numerical simulations. Extreme-scale environments require increased levels of process automation and reliability not currently available in state-of-the-art mesh generation tools. These shortcomings make geometry modeling and mesh generation a pacing bottleneck for the future.** **The goal of the proposed panel is to provide technical interchange to help illuminate the path for geometry and mesh generation as a supporting element of the NASA CFD 2030 Vision.** **Moderator: Hugh Thornburg** **Panelists:** J. Dannenhoffer; J.R. Chawner; N. Taylor; J.P. Slotnick; S. Dey; W. Jones
2:00 PM-4:00 PM, Osceola Ballroom B, **PANEL-02. Climate Change and National Security**, Panel, **Forum 360**	
2:00 PM-5:30 PM, Emerald 2, **Plasma Assisted Combustion II: AFOSR MURI Reports**	

4:30-5:30 PM	**Panel Discussion** Panelists: Igor Adamovich, The Ohio State University Andrey Starikovskiy, Princeton University Richard Miles, Princeton University Rich Yetter, Penn State University Yiguang Ju, Princeton University Vigor Yang, Georgia Tech
2:00-2:30 PM	**Multi-Scale Modeling of Plasma-Assisted Ignition and Combustion** S. Nagaraja; V. Yang
2:30-3:00 PM	**Plasma assisted ignition of combustible mixtures.** **Effect of electronically excited O(1D) atoms and vibrationally excited molecules** N. Popov
3:00-3:30 PM	**Parametric study of plasma-assisted ignition in combustible mixtures** N.L. Alexandrov; I. Kosarev; S. Kindysheva; A. Starikovskiy
3:30-4:00 PM	**High-pressure nanosecond discharges for plasma-assisted combustion** S. Starikovskaia
4:00-4:30 PM	**Nanosecond Repetitively Pulsed Discharges in Plasma-Assisted Combustion** C.O. Laux
2:00 PM-5:30 PM, Emerald 3, **PC-06. Combustion Chemistry**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Panagiotis Kourdis, California Institute of Technology	
2:00-2:30 PM	**Simulations of a Micro-Reactor for the Study of the Unimolecular Decomposition of Large Fuel Molecules** Q. Guan; G. Ellison; J.W. Daily
2:30-3:00 PM	**Modeling Gas Dynamic Effects in Shock-Tubes for Reaction Kinetics Measurements** K. Grogan; Q. Wang; M. Ihme
3:00-3:30 PM	**Hydrocarbon Emissions from a WSR Near Lean Blow-Off** D.L. Blunck; S. Zeppieri; J.T. Gross; S. Stouffer; M.B. Colket
3:30-4:00 PM	**HP-Mech: A High Pressure Kinetic Mechanism for C2 Flames with Exhaust Gas Dilution** J.S. Santner; X. Yang; D. Chen; Q. Wang; Y. Ju; X. Shen
4:00-4:30 PM	**The Effects of Non-Uniform Boundary Temperatures in Ignition Delay Time Measurements from Heated Rapid Compression Machine Experiments** C.M. Allen; J.E. Neuman

4:30-5:00 PM	**High-Pressure Fuel Pyrolysis Investigation Using a Microflow Tube Reactor** U. Shrestha; G. Simms; H.K. Chelliah
5:00-5:30 PM	**Unsteady Rans Simulation of an Enclosed, Turbulent Reacting Methane Jet with the Premixed CMC Method** S. Vasu
2:00 PM-5:30 PM, Emerald 5, **PC-07. Spray and Droplet Combustion II**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Yannis Hardalupas, Imperial College London	
2:00-2:30 PM	**Multi-Scale Simulation of Primary Breakup in Gas-Assisted Atomization** Y. Ling; S. Zaleksi
2:30-3:00 PM	**Aspects of droplet grouping in polydisperse spray diffusion flames** J.B. Greenberg; D. Katoshevski
3:00-3:30 PM	**Hypergolic Ignition and Flame Structures of Hydrazine Spray/Gaseous Nitrogen Tetroxide Co-flowing Jets** H. Tani; H. Terashima; M. Koshi; Y. Daimon
3:30-4:00 PM	**A Computational Study of Internal Flows in a Heated Water-Oil Emulsion Droplet** J. Sim; H.G. Im; S. Chung
2:00 PM-5:30 PM, Emerald 7, **PC-08. Turbulent Combustion II**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: Giulio Borghesi; Co-Chair: Jacqueline O`Connor, Pennsylvania State University	
2:00-2:30 PM	**Spatiotemporal Characterization of Flame-Vortex Interactions in Bluff-Body Stabilized Turbulent Premixed Flames Using Simultaneous High-Repetition-Rate OH-PLIF and PIV** A.W. Caswell; B.A. Rankin; B. Huelskamp; N. Jiang; A. Lynch; V. Belovich; J.R. Gord
2:30-3:00 PM	**Proper Orthogonal Decomposition Analysis of a Turbulent Swirling Self-Excited Premixed Flame** A. Kypraiou; A. Dowling; E. Mastorakos; N. Karimi
3:00-3:30 PM	**Influence of Fuel Stratification on Turbulent Flame Propagation** M. Hassanaly; V. Raman; M.B. Colket
3:30-4:00 PM	**Measurement of 3D Rayleigh Index fields in helically-perturbed swirl flames using doubly-phase-conditioned chemiluminescence tomography** B.D. Geraedts; S. Yang; C.M. Arndt; A.M. Steinberg
4:00-4:30 PM	**Modeling the Response of Turbulent Flames to Harmonic Forcing** L. Humphrey; V.S. Acharya; D. Shin; T.C. Lieuwen
4:30-5:00 PM	**Stability Analysis of Reacting Wakes: Flow and Density Asymmetry Effects** B.L. Emerson; S. Jagtap; T.C. Lieuwen
5:00-5:30 PM	**Effect of Ignition Chemistry on Turbulent Premixed Flames of n-Heptane and iso-Octane** S. Won; S. Nakane; C.B. Reuter; B.C. Windom; Y. Ju

2:00 PM-5:30 PM, Osceola Ballroom 4, **SCS-02. Solar Sails and Tensioned Membranes**, Technical Paper, **2nd AIAA Spacecraft Structures Conference**, Chair: Richard Pappa, NASA Langley Research Center; Co-Chair: Jeremy Banik, USAF	
2:00-2:30 PM	**Recent Advances in Heliogyro Solar Sail Structural Dynamics, Stability, and Control Research** W.K. Wilkie; J. Warren; L.G. Horta; K.H. Lyle; J. Juang; S.C. Gibbs; E. Dowell; D.V. Guerrant; D.A. Lawrence
2:30-3:00 PM	**Empirical Modeling for Sail Membrane Dynamics by Fusing Measurement Data and Numerical Analysis** M. Yamazaki
3:00-3:30 PM	**Structural and Attitude Dynamics and Control of a Solar Sail using Two Degrees of Freedom Tip Vanes** M. Choi; C.J. Damaren
3:30-4:00 PM	**Deployment Testing of the De-Orbit Sail Flight Hardware** M. Hillebrandt; S. Meyer; M.E. Zander; C. Huehne
4:00-4:30 PM	**Nonlinear Torsional Dynamics and Control of Heliogyro Solar Sail Blades** D.V. Guerrant; D.A. Lawrence
4:30-5:00 PM	**Deformation Properties of Solar Sail IKAROS Membrane with Nonlinear Finite Element Analyses** Y. Satou; O. Mori; N. Okuizumi; Y. Shirasawa; H. Furuya; H. Sakamoto
2:00 PM-5:30 PM, Tampa 2, **SD-04. Flutter, LCO and Aeroelastic Tailoring**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: William Schneider, Lockheed Martin Aeronautics; Co-Chair: Robert Scott, NASA-Langley Research Center	
2:00-2:30 PM	**Plans and example results for the 2nd AIAA Aeroelastic Prediction Workshop** J. Heeg; P. Chwalowski; D.E. Raveh; M.J. Dalenbring; A. Jirasek
2:30-3:00 PM	**Transonic Flutter Characteristics of Advanced Fighter Wings** O.O. Bendiksen
3:00-3:30 PM	**Aeroelastic Tailoring using Rib/Spar Orientations: Experimental Investigation** G. Francois; J.E. Cooper; P. Weaver
3:30-4:00 PM	**On the Interpretation of Bending-Torsion Coupling for Swept, Non-Homogenous Wings** O. Stodieck; J.E. Cooper; P. Weaver
4:00-4:30 PM	**Morphing Wing Design for Fixed Wing Aircraft** J. Yang; P. Sartor; J.E. Cooper; R.K. Nangia
4:30-5:00 PM	**Prediction of Wing Flutter Boundary Using High Fidelity Delayed Detached Eddy Simulation** J. Gan; H. Im; X. Chen; G. Zha; C.L. Pasiliao
5:00-5:30 PM	**Analysis of the Transonic Flutter of Supersonic Transport Wings** E.C. Mellquist; O.O. Bendiksen

2:00 PM-5:30 PM, Tampa 3, **SD-05. Energy Harvesting, Health Monitoring and Multifunctional Structures** , Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: William Welsh, Sikorsky Aircraft Corporation; Co-Chair: Hyoung Kim, Boeing Defense, Space & Security	
2:00-2:30 PM	**Modeling of Highly Flexible Multifunctional Wings for Energy Harvesting** W. Su; N. Tsushima
2:30-3:00 PM	**Performance Analysis and Parametric Design of an Airfoil-Based Piezoaeroelastic Energy Harvester** Y. Wu; D. Li; J. Xiang
3:00-3:30 PM	**Harvesting at the Margins: A Study of Harvesting Away from Optimal Conditions** T.D. Hynds; J.L. Kauffman
3:30-4:00 PM	**Detecting Damage in a UAV Composite Wing Spar Using Distributed Fiber Optic Strain Sensors** B.L. Martins; J.B. Kosmatka
4:00-4:30 PM	**Damage Characterization Using Matching Pursuit with a Guided Wave Simulation Library** M.B. Obenchain; C.E. Cesnik
2:00 PM-5:30 PM, Sun Ballroom D, **STR-04. Special Session: Composite Laminate Optimization**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Mostafa Rassaian, Boeing Engineering Operations & Technology; Co-Chair: Adriana Blom, The Boeing Company	
2:00-2:30 PM	**Maximizing Buckling Load Factors of Fiber-Placed Composite Cylindrical Shells by Particle Swarm Optimization** S. Guldu; A. Kayran
2:30-3:00 PM	**Optimisation of Variable Stiffness Composites with Ply Drops** D. Peeters; M. Abdalla
3:00-3:30 PM	**Optimal Postbuckling Design of Variable Angle Tow Composites using Lamination Parameters** G. Raju; S. White; Z. Wu; P. Weaver
3:30-4:00 PM	**Mass Optimisation of Variable Angle Tow, Variable Thickness Panels with Static Failure and Buckling Constraints** R.M. Groh; P. Weaver
4:00-4:30 PM	**Level Set Optimization for Steered Fiber Composites** C. Brampton; H.A. Kim
4:30-5:00 PM	**Optimization of Composite Plates with Spatially Varying Fiber Paths for Thermal Buckling** A.V. Duran; N. Fasanella; V. Sundararaghavan; A.M. Waas
2:00 PM-5:30 PM, Tampa 1, **STR-05. Aircraft Structural Design**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Michael Wolff, Gulfstream Aerospace Corporation; Co-Chair: Pezhman Mardanpour	
2:00-2:30 PM	**Topology Optimization of Composite Structures for Multifunctional Behavior** D.R. Seifert; M. Patil; G.D. Seidel

2:30-3:00 PM	**Methodology for Conceptual Design with Composite Stiffened Skin** A.T. Noevere; A.W. Wilhite
3:00-3:30 PM	**Structural Loads Analysis of a Carrier Onboard Delivery Aircraft** B.D. Flansburg
3:30-4:00 PM	**Reliability Based Structural Design using Continuum Sensitivity Analysis** M.D. Kulkarni; R.A. Canfield
4:00-4:30 PM	**Full Scale Aircraft Drop Test Program for the F-35C Carrier Variant** D.S. Norwood; R.H. Chichester
4:30-5:00 PM	**Analytical Evaluation of Composite Laminates with Scored Balsa** A. Tran; K. Wetzel; R.D. Hale
2:00 PM-5:30 PM, Tallahassee 3, **STR-06. Failure Analysis and Prediction I**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Steven Russell, Triumph Aerostructures; Co-Chair: James Min, NASA Glenn Research Center; Co-Chair: Maenghyo Cho, Seoul National University	
2:00-2:30 PM	**A novel two-parameter linear elastic constitutive model for bond based peridynamics** N. Prakash; G.D. Seidel
2:30-3:00 PM	**Computational Techniques for the Thermostructural Analysis of Composites** V.K. Goyal
3:00-3:30 PM	**A Micromechanical Approach to Static Failure Prediction of Heterogeneous Materials** H.M. Sertse; W. Yu
3:30-4:00 PM	**Tensile Response of Oxide/Oxide Woven Ceramic Composites** D. Zhang; P. Meyer; A.M. Waas
4:00-4:30 PM	**Ordinary-State Based Peridynamic Truss Element** M. Dorduncu; A. Borut; E. Madenci
4:30-5:00 PM	**Progressive Damage and Failure Prediction of Open Hole Tension and Open Hole Compression Specimens** A. Joseph; A.M. Waas; W. Ji; E.J. Pineda; S.L. Liguore; S.P. Wanthal
5:00-5:30 PM	**Comparative Studies of Residual Stress Effects on Fatigue Crack Growth of Welded Aluminum Structures under Block Spectrum Loading** S. Alireza; E. Fang; X. Liu; J. Lua
2:00 PM-5:30 PM, Miami 3, **TP-02. Cryogenics**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: Hongbin Ma, University of Missouri; Chair: Eric Silk, NASA-Goddard Space Flight Center	
2:00-2:30 PM	**Numerical Simulation of the Liquid Nitrogen Chilldown of a Vertical Tube** S.R. Darr; H. Hu; R. Shaeffer; J. Chung; J.W. Hartwig; A.K. Majumdar
2:30-3:00 PM	**RANS Modeling of Transcritical and Supercritical Nitrogen Jets** E.F. Antunes; A.R. Silva; J.M. Barata

3:00-3:30 PM	**Models for Cyrogenic Cavitation in Rotating Turbomachinery** J.A. Schwille; D.E. Jackson
3:30-4:00 PM	**Thermodynamic Effect on Backflow Vortex Cavitation** A. Tsunoda; Y. Ito; N. Tani; T. Nagasaki
4:00-4:30 PM	**Cryogenic Loop Heat Pipe for Zero-Boil-Off Cryogen Storage** D. Zakar; R.W. Baldauff; T.T. Hoang
4:30-5:00 PM	**Numerical Modeling of the Transient Chilldown Process of a Cryogenic Propellant Transfer Line** J.W. Hartwig; J. Vera
2:00 PM-5:30 PM, Sun Ballroom B, **TP-03. Nonequilibrium Flows and Radiation I**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Marco Panesi, University of Illinois at Urbana Champaign; Co-Chair: Jonathan Burt, Universal Technology Corporation	
2:00-2:30 PM	**Direct simulation of rovibrational excitation and dissociation in molecular nitrogen using an ab initio potential energy surface** P. Valentini; I. Nompelis; T.E. Schwartzentruber
2:30-3:00 PM	**State-to-State Kinetic Model for a Viscous Radiating Hypersonic Flow** E. Josyula; J.M. Burt; E. Kustova; P. Vedula
3:00-3:30 PM	**State-to-State Modeling of CO for Mars Entry Applications** R.L. Macdonald; A. Munafò; C.O. Johnston; M. Panesi
3:30-4:00 PM	**State Specific Modeling of Energy Transfer and Chemical Reactions in Shocks using High Fidelity Models** T. Zhu; Z. Li; N.S. Parsons; D.A. Levin
4:00-4:30 PM	**Nonequilibrium Radiation Modeling for a Low Enthalpy Hypersonic Shock Layer** J.M. Burt; E. Josyula
4:30-5:00 PM	**Sensitivity of State-Specific Dissociation Cross Sections to O3 Potential Energy Surfaces** M.F. Kulakhmetov; A. Alexeenko
5:00-5:30 PM	**Dissociation and Energy transfer study of N2-N and N2-N2 interactions by using rovibrational and coarse-grained state-to-state models** A. Munafò; R.L. Jaffe; D.W. Schwenke; M. Panesi
2:00 PM-5:30 PM, Osceola Ballroom 3, **UMS-01. UAS Integration: Detect and Avoid Technologies** , Technical Paper, **AIAA Infotech @ Aerospace**, Chair: Michael Logan, NASA Langley Research Center; Co-Chair: Richard Stansbury, Embry-Riddle Aeronautical University	
2:00-2:30 PM	**Defining Well Clear for Unmanned Aircraft Systems** S.P. Cook; D. Brooks; R. Cole; D. Hackenberg; V. Raska
2:30-3:00 PM	**Challenges and Solutions for Vision-based Sense and Avoid** G. Fasano; D. Accardo; A.E. Tirri; A. Moccia; E. De Lellis

3:00-3:30 PM	**Conflict Detection and Resolution System Architecture for Unmanned Aerial Vehicles in Civil Airspace** Y.I. Jenie; E. Van Kampen; J. Ellerbroek; J.M. Hoekstra
3:30-4:00 PM	**Unmanned Aircraft System Sense and Avoid Integrity and Continuity Risk for Non-Cooperatve Intruders** M.B. Jamoom; M. Joerger; S. Khanafseh; B. Pervan
4:00-4:30 PM	**Development of a Surrogate Autonomous Aircraft for Entry in the NASA Airspace Operation Challenge** R. Anderson; H. Moncayo; R.J. Prazenica; M.D. Mirmirani; A. Noriega; B. Burnett; V.P. Gehlot; Z. Kern
4:30-5:00 PM	**Real-Time Validation of an ADS-B Based Aircraft Conflict Detection System** M. Orefice; V. Di Vito; F. Corraro; G. Fasano; D. Accardo
5:00-5:30 PM	**Optimal UAS Path Planning for Convoy Overwatch** R.A. Livermore; R. Cobb
2:00 PM-5:30 PM, Emerald 6, **WE-03. Wind Energy Blade and Turbine Design**, Technical Paper, **33rd Wind Energy Symposium**, Chair: D. Todd Griffith, ; Co-Chair: Christopher Kelley	
2:00-2:30 PM	**Free-form Design of Low Induction Rotors** C.L. Bottasso; A. Croce; L. Sartori
2:30-3:00 PM	**Analysis of the Impact of Leading Edge Surface Degradation on Wind Turbine Performance** C.M. Langel; R. Chow; O.F. Hurley; C.P. Van Dam; D.C. Maniaci; R.S. Ehrmann; E.B. White
3:00-3:30 PM	**Horizontal-Axis Wind Turbine Wake Sensitivity to Different Blade Load Distributions** C.L. Kelley; D.C. Maniaci; B.R. Resor
3:30-4:00 PM	**Aero-Elastic Optimization of a 10 MW Wind Turbine** F. Zahle; C. Tibaldi; D.R. Verelst; R. Bitche; C. Bak
4:00-4:30 PM	**Effects of spanwise blade load distribution on wind turbine wake evolution** X. Yang; A. Boomsma; F. Sotiropoulos; B.R. Resor; D.C. Maniaci; C.L. Kelley
4:30-5:00 PM	**Numerical Simulations of Subscale Wind Turbine Rotor Inboard Airfoils at Low Reynolds Number** M.L. Blaylock; D.C. Maniaci; B.R. Resor
2:00 PM-5:30 PM, Emerald 4, **WE-04. Wind Energy Aerodynamics and Aeroacoustics II**, Technical Paper, **33rd Wind Energy Symposium**, Chair: Taeseong Kim, Technical University of Denmark	
2:00-2:30 PM	**Non-conventional flat back thick airfoils for very large offshore wind turbines** F. Grasso; O. Ceyhan
2:30-3:00 PM	**Numerical Studies Of the Upstream Flow Field Around A Horizontal Axis Wind Turbine** H. Abedi; L. Davidson; S. Voutsinas

3:00-3:30 PM	**Investigation of Wind Turbine Power Generation During Atmospheric Icing by Multi-Disciplinary Experimentation** P. Blasco; J. Palacios; S. Schmitz
3:30-4:00 PM	**AVATAR: AdVanced Aerodynamic Tools of lArge Rotors** G. Schepers
4:00-4:30 PM	**Experimental Investigation of the Wake Flow Field of a Model Wind Turbine Rotor with Tip Injection** A. Abdulrahim; E. Anik; O. Uzol
4:30-5:00 PM	**Cross-Validation of Numerical and Experimental Studies of Transitional Airfoil Performance** A. Frere; K. Hillewaert; H.S. Chivaee; R.F. Mikkelsen; P. Chatelain
3:00 PM-5:30 PM, Osceola Ballroom 5, **APA-09/NDA-01. Frontiers of Uncertainty Management for Complex Aerospace Systems**, Panel, **17th AIAA Non-Deterministic Approaches Conference (non-paper sessions)**, Chair: Rick Graves, Air Force Reseach Laboratory; Co-Chair: Philip Morgan, Ohio Aerospace Institute	

Tuesday, January 06, 2015

Time	Session or Event Info
8:00 AM-9:00 AM, Osceola Ballroom CD, **PLNRY-02. International Trends in Aerospace: Up, Up and Away? To Where?**, Plenary, **Forum**	
9:30 AM-12:30 PM, Miami 2, **AA-03. Computational Aeroacoustics II**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Judith Gallman, Gulfstream	
9:30-10:00 AM	**LES of jet flow and noise with internal and external geometry features** J.C. Tyacke; P.G. Tucker
10:00-10:30 AM	**Implementation of a Sharp Immersed Boundary Method in a 3-D Multi -block Large Eddy Simulation Tool for Jet Aeroacoustics** N.S. Dhamankar; G.A. Blaisdell; A.S. Lyrintzis
10:30-11:00 AM	**Synchronized Large-Eddy Simulations to track Native Perturbations in a Turbulent Jet** U. Sasidharan Nair; D.V. Gaitonde
11:00-11:30 AM	**Verification and Validation of High-Order Discontinuous Galerkin and Hybrid RANS/LES Method for Acoustics Prediction** R.E. Harris; E. Collins; E.A. Luke; A. Sescu
9:30 AM-12:30 PM, Sun Ballroom C, **AA-04. Jet Noise Prediction I**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Anthony Pilon, Lockheed Martin Aeronautics	
9:30-10:00 AM	**Application of Synthetic Array Techniques for Improved Simulations of Hot Supersonic Jet Noise** C. Nelson; A.B. Cain; R.P. Dougherty; K.S. Brentner; P.J. Morris

10:00-10:30 AM	**Numerical Study of Noise Characteristics in Overexpanded Jet Flows** J. Liu; A.T. Corrigan; K. Kailasanath; N.S. Heeb; E.J. Gutmark
10:30-11:00 AM	**Analysis of Converging-Diverging Beveled Nozzle Jets Using Large Eddy Simulation with a Wall Model** K.M. Aikens; G.A. Blaisdell; A.S. Lyrintzis
11:00-11:30 AM	**Numerical modelling of jets exiting from the ASME and conical nozzles** C. Bogey; O. Marsden
11:30-12:00 PM	**Numerical Simulation of Supersonic Twin-Jet Noise with High Order Finite Difference Scheme** J. Gao; X. Xu; X. Li
12:00-12:30 PM	**3-D Jet Noise Prediction for Separate Flow Nozzles with Pylon Interaction** X. Xu; J. He; X. Li; F. Hu
9:30 AM-12:30 PM, Naples 3, **ACD-01. Aircraft Design Optimization,** Technical Paper, **53rd AIAA Aerospace Sciences Meeting,** Chair: Hernando Jimenez, Georgia Institute of Technology	
9:30-10:00 AM	**Optimized Military Transport Aircraft Design Through Multi-Objective Analysis of Fleet-Level Metrics Under Demand Uncertainty** P. Govindaraju; W.A. Crossley
10:00-10:30 AM	**Evaluation of N+2 Technologies and Advanced Vehicle Concepts** J. Schutte; D.N. Mavris
10:30-11:00 AM	**Comparison of Advanced Vehicle Concepts through Pareto-Optimal Technology Sets** C. Ingram; H. Jimenez; D.N. Mavris
11:00-11:30 AM	**An Aircraft Conceptual Design and Optimization Platform and Its Application for Nature Laminar Flow Aircraft Study** Y. Zhao; H. Chen; Y. Zhang
11:30-12:00 PM	**Multirotor Configuration Feasibility Analysis and Optimal Design Based on Moore-Penrose Pseudoinverse** Z. Hu; S. Yang; F. Xiong
9:30 AM-12:30 PM, Captiva 2, **AFM-05. Aerodynamic Prediction Methods,** Technical Paper, **AIAA Atmospheric Flight Mechanics Conference,** Chair: Francis Priolo, Millennium Engineering and Integration Company	
9:30-10:00 AM	**Linear Computational Fluid Dynamic Analysis of Dynamic Ground Effect of a Wing in Sink and Flare Maneuvers** G. Quijada; P.J. Boschetti
10:00-10:30 AM	**Computational Analysis of a Flow Around Two-Dimensional Streamlined Bodies with OpenFOAM** R. Habbit; A. Porteous; C. Echavarria; S. Poroseva; S.M. Murman
10:30-11:00 AM	**Analytical Aerodynamic Force and Moment Coefficients of Axisymmetric Objects in Rarefied Flow** K.A. Hart; K.R. Simonis; B.A. Steinfeldt; R.D. Braun

11:00-11:30 AM	**Kinetic Models and Gas Kinetic Schemes for Hybrid Simulation of Partially Rarefied Flows** S. Colonia; R. Steijl; G.N. Barakos
11:30-12:00 PM	**Trajectory Simulation of a Spinning Projectile Based on Variable Step Size CFD/RBD Method** G. Wang; Z. Zeng; Q. Suo
12:00-12:30 PM	**Analytical Shock Standoff and Shape Prediction with Validation for Blunt Face Cylinder** J.D. Martel; B. Jolly
9:30 AM-12:30 PM, Captiva 1, **AFM-06. Atmospheric Entry, Hypersonic Flight and Aeroassist Technology**, Technical Paper, **AIAA Atmospheric Flight Mechanics Conference**, Chair: Michael Bolender, Air Force Research Lab	
9:30-10:00 AM	**A Comparison of Three Algorithms for Orion Drogue Parachute Release** D.A. Matz; R.D. Braun
10:00-10:30 AM	**Spatial Parameterization of Blunt Body Dynamics under Parachutes** M.P. Hughes
10:30-11:00 AM	**Coupled Inertial Navigation and Flush Air Data Sensing Algorithm for Atmosphere Estimation** C.D. Karlgaard; P. Kutty; M. Schoenenberger
11:00-11:30 AM	**Free Flight Investigation of Atmospheric Entry Capsules in Low Subsonic Flow** A. Preci; A. Guelhan
11:30-12:00 PM	**The Flight Dynamics of the HIFiRE Flight 6 Research Vehicle** D.W. Adamczak; M.A. Bolender
9:30 AM-12:30 PM, Tallahassee 1, **AMT-02. Laser Diagnostics for Reacting Flows**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: Jeffrey Sutton, Ohio State University; Co-Chair: David Plemmons, Aerospace Testing Alliance (ATA)	
9:30-10:00 AM	**Characterization of Inverse Diffusion Flames by Planar Laser Induced Fluorescence of CO and OH** D.R. Richardson; N. Jiang; S. Roy; A. Lynch; J.R. Gord
10:00-10:30 AM	**Pulsed Laser Diode for Use as a Light Source for Short-Exposure, High-Frame-Rate Flow Visualization** N.J. Parziale; B.E. Schmidt; P. Wang; H. Hornung; J. Shepherd
10:30-11:00 AM	**High-Speed 1D Raman/Rayleigh Scattering Imaging in Turbulent H2/N2 Flames** K.N. Gabet Hoffmeister; F. Fuest; J.A. Sutton
11:00-11:30 AM	**Techniques for Three-Dimensional Flame Reconstructions with a Plenoptic Camera** J. Bolan; K.C. Johnson; B.S. Thurow
11:30-12:00 PM	**Time Resolved Planar Measurements in the wake of a Reacting Jet Injected into a Swirling, Vitiated Crossflow at High Pressure** P.P. Panda; M. Roa; R.P. Lucht
12:00-12:30 PM	**In situ Measurements of Ethylene and Methyl Radical by using the Radar REMPI technique** Y. Wu; Z. Zhang

9:30 AM-12:30 PM, Destin 2, **APA-10. Icing or Roughness Effects on Vehicle Aerodynamics II**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Steven Morris, Engineering Systems, Inc.; Co-Chair: David O'Brien, US Army RDECOM	
9:30-10:00 AM	**Two-Dimensional/Infinite Swept Wing Ice Accretion Model** S. Bourgault-Cote; E. Laurendeau
10:00-10:30 AM	**The Influence of Ice Accretion on the Aerodynamic Performance of a UAS Airfoil** K. Szilder; W. Yuan
10:30-11:00 AM	**Numerical Simulation of Hot Air Anti-icing Charateristics of an Aero-engine Strut** W. Dong; J. Zhu; G. Lei; M. Zheng
11:00-11:30 AM	**Calculation and Analysis of Water Film Flow Characteristics on Anti-icing Airfoil Surface** W. Dong; M. Zheng; G. Lei; J. Zhu
9:30 AM-12:30 PM, Destin 1, **APA-11. Other Topics in Applied Aerodynamics**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Travis Douville, TLG Aerospace, LLC.; Co-Chair: Gregory Gatlin,	
9:30-10:00 AM	**Flight Test Experiments on Discrete Roughness Element Technology for Laminar Flow Control** W.S. Saric; D.E. West; M.W. Tufts; H.L. Reed
10:00-10:30 AM	**Assessment of the Potential for Micro Energy Harvesting in a Fixed-Wing MAV Configuration** D. Martos; J.M. Melo De Sousa
10:30-11:00 AM	**Forecast of Uncertainty-Based Analytics for a Data Acquisition Probe in the Presence of Cross Winds** R.E. Graves
11:00-11:30 AM	**Experimental study of supersonic corner flow evolution in a rectangular channel** R.R. Morajkar; J.F. Driscoll; M. Gamba
11:30-12:00 PM	**Efficient Flight Simulation Using Kriging Surrogate Model Based Aerodynamic Database** N. Othman; M. Kanazaki
12:00-12:30 PM	**Aerodynamic Study of Range Extension Modification for a Fighter Aircraft** J. Masud; O. Khan
9:30 AM-12:30 PM, Sun Ballroom A, **APA-12. High-Angle-of-Attack, High-lift and Vortical Flow Aerodynamics**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Anya Jones, University of Maryland; Co-Chair: Matthew Conway, The Aerospace Corporation	
9:30-10:00 AM	**Mixing Flow Characteristics for a Transverse Sonic Jet Injecting into a Supersonic Crossflow** E. Khali; Y. Yao
10:00-10:30 AM	**Initiation of Leading-Edge-Vortex Formation on Finite Wings in Unsteady Flow** Y. Hirato; M. Shen; S. Aggarwal; A. Gopalarathnam; J.R. Edwards
10:30-11:00 AM	**Effect of Roll Orientation on the Vortex Asymmetry on a Conical Forebody** J. Taligoski; A. Uzun; R. Kumar

11:00-11:30 AM	**Improved Methodology for Predicting the Force on Stalled Spinning Wings** A. Ragheb; M.S. Selig
11:30-12:00 PM	**Aerodynamics of the F-15 At High Angle of Attack** S. Yang; P. Chen; X. Wang; M.P. Mignolet; D.M. Pitt
12:00-12:30 PM	**Aerodynamics and Flow Mechanics of a Two-Element Airfoil in Ground Effect** Q. Qu; W. Wang; P. Liu; R.K. Agarwal
9:30 AM-12:30 PM, Naples 2, **APA-13. Special Session: CREATE-AV High Performance Computing Multiphysics Applications of Full-up Air Vehicles II**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Nathan Hariharan, CREATE-AV; Co-Chair: David McDaniel, University of Alabama at Birmingham	
9:30-10:00 AM	**An Assessment of CREATE-AV Kestrel for F-35 Aero/Performance Applications** B.R. Smith
10:00-10:30 AM	**An Industry Assessment of HPCMP CREATE-AV Kestrel** D. Stookesberry
10:30-11:00 AM	**An Industry Assessment of HPCMP CREATE-AV Helios** R. Narducci
11:00-11:30 AM	**Coaxial Rotor Wake and Prop Induction Impact on a Horizontal Tail Using HPCMP CREATE™-AV Helios** E. Reed; T. Egolf
11:30-12:00 PM	**Computational Fluid Dynamics for the Aerodynamic Design and Modeling of a Ram-Air Parachute with Bleed-Air Actuators** M. Ghoreyshi; K. Bergeron; J. Seidel; A. Jirasek; A.J. Lofthouse; R.M. Cummings
12:00-12:30 PM	**Coupled Flight Simulator and CFD Calculations of Ship Airwake using Kestrel** J.R. Forsythe; E. Lynch; S. Polsky
9:30 AM-12:30 PM, Naples 1, **APA-14. Special Session: Space Launch System (SLS) I**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: John Blevins, NASA Marshall Space Flight Center; Co-Chair: Jeremy Pinier, NASA Langley Research Center	
9:30-10:00 AM	**Overview of the Space Launch System Transonic Buffet Environment Test Program** D.J. Piatak; M.K. Sekula; R. Rausch; J.R. Florance; T.G. Ivanco
10:00-10:30 AM	**Initial Assessment of Space Launch System Transonic Unsteady Pressure Environment** M.K. Sekula; D.J. Piatak; R. Rausch; J.R. Florance; J. Ramey
10:30-11:00 AM	**Computational and Experimental Unsteady Pressures for Alternate SLS Booster Nose Shapes** G.J. Brauckmann; C. Streett; W.L. Kleb; S.J. Alter; K.J. Murphy; C. Glass
11:00-11:30 AM	**An Empirical Non-TNT Approach to Launch Vehicle Explosion Modeling** J.M. Blackwood

11:30-12:00 PM	**Space Launch System Ascent Aerothermal Environments Methodology** C.I. Morris
9:30 AM-12:30 PM, Sarasota 2, **DE-01. Design Engineering**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Co-Chair: Franz-Josef Kahlen, University of Cape Town; Chair: Sidney Rowe, NASA Marshall Space Flight Center	
9:30-10:00 AM	**Multi-Objective Hydrodynamic Design Optimization of a Centrifugal Pump** M. Sagban; S.N. Gangadharan
10:00-10:30 AM	**The process of validating Model and Software for applying Model-Based Development (MBD) to embedded systems more fruitfully** S. Mina; H. Oyori
10:30-11:00 AM	**An Intermeshing Rotor Helicopter Design and Test** F. Wei; E. Moore; A. Gates
11:00-11:30 AM	**Perching Feasibility of a Fixed Delta M-Wing MAV** D.M. Patel
9:30 AM-12:30 PM, Sanibel 1, **FD-14. CFD Methods III**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Shuangzhang Tu, Jackson State University; Co-Chair: Meilin Yu, University of Maryland, Baltimore County	
9:30-10:00 AM	**Advanced Data Transfer Strategies for Overset Computational Methods** E.W. Quon; M. Smith
10:00-10:30 AM	**Further Development of a Riemann-solver Free Space-time Discontinuous Galerkin Method for Compressible Magnetohydrodynamics (MHD) Equations** H. Song; L. Ji; Q. Pang; S. Tu
10:30-11:00 AM	**Wave-number Independent Preconditioning for GMRES Time-spectral Solvers** N.L. Mundis; D.J. Mavriplis
11:00-11:30 AM	**Finite-element Time Discretizations for the Unsteady Euler Equations** N.L. Mundis; D.J. Mavriplis
11:30-12:00 PM	**Homotopy Continuation for Correction Procedure via Reconstruction – Discontinuous Galerkin (CPR-DG) Methods** M. Yu; Z.J. Wang
12:00-12:30 PM	**Source Term Discretization Effects on the Accuracy of Finite Volume Schemes** J.L. Thorne; A.J. Katz
9:30 AM-12:30 PM, Sanibel 2, **FD-15. Discontinuous Galerkin Methods I**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: Eric Johnsen, University of Michigan; Co-Chair: HT Huynh, NASA Glenn Research Center	
9:30-10:00 AM	**A general and robust high-order numerical framework for shock-capturing: entropy-bounding, shock detection and artificial viscosity** Y. Lv; Y. See; M. Ihme

10:00-10:30 AM	**Analysis of Discontinuous Galerkin Approaches for Advection--Diffusion Problems** L.H. Khieu; K. Fidkowski; E. Johnsen
10:30-11:00 AM	**A dissipative Filter for the Discontinuous Galerkin method** K. Panourgias; J.A. Ekaterinaris
11:00-11:30 AM	**A Reconstructed Discontinuous Galerkin Method for the Compressible Navier-Stokes Equations on Hybrid Grids** H. Luo; L. Xuan; Y. Xia
11:30-12:00 PM	**Three-Dimensional Discontinuous Galerkin h/p Adaptive Numerical Solutions for Compressible Flows** K. Panourgias; J.A. Ekaterinaris
9:30 AM-12:30 PM, Daytona 1, **FD-16. Experiments in Energy Exchange in High Speed Flows (Invited)**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: Joanna Austin, University of Illinois at Urbana-Champaign; Co-Chair: Eswar Josyula, Air Force Reseach Laboratory	
9:30-10:00 AM	**Progress on the Basic Research Initiative for AFOSR on how energy transfer mechanisms affect flow properties around bodies going at hypersonic speeds (Invited)** J.D. Schmisseur; I.A. Leyva
10:00-10:30 AM	**Boundary-Layer Transition on a Slender Cone in Hypervelocity Flow with Real Gas Effects (Invited)** J.S. Jewell
10:30-11:00 AM	**Measurements of Vibrational Energy Transfer and Its Effect on the Flow in a Plasma Wind Tunnel (Invited)** M. Nishihara; S.B. Leonov; W.R. Lempert; J. Rich; I.V. Adamovich
11:00-11:30 AM	**Measurements of Vibrational Non-equilibrium in Supersonic Jet Mixing and Combustion (Invited)** H. Reising; T. Haller; N.T. Clemens; P.L. Varghese
11:30-12:00 PM	**Flow characterization and boundary layer transition studies in VKI hypersonic facilities (Invited)** G. Grossir; D. Masutti; O. Chazot
12:00-12:30 PM	**Shock Wave- Boundary Layer Interaction In Hypervelocity Flow** J.M. Austin; A. Knisely; D.A. Levin
9:30 AM-12:30 PM, Sanibel 3, **FD-17. Shock-Dominated Flows II**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Doyle Knight, Rutgers University	
9:30-10:00 AM	**Physical Diffusion Cures the Carbuncle Phenomenon** J.M. Powers; J.D. Bruns; A. Jemcov
10:00-10:30 AM	**Assessment of CFD Capability for High Enthalpy Non-Equilibrium Flows with Strong Viscous-Inviscid Interaction** M. Rouhi Youssefi; D.D. Knight
10:30-11:00 AM	**Numerical Prediction of Dynamics of Microwave Filament Interaction with Supersonic Combined Cylinder Bodies** O.A. Azarova; D.D. Knight

11:00-11:30 AM	**Numerical Prediction of Dynamics of Interaction of Laser Discharge Plasma with a Hemisphere-Cylinder in a Supersonic Flow** O.A. Azarova; D.D. Knight
11:30-12:00 PM	**Numerical Simulation of Energy Deposition in a Viscous Supersonic Flow Past a Hemisphere** M. Mortazavi; D.D. Knight
12:00-12:30 PM	**LES for Prediction of Pressure Fluctuation for Supersonic Flow around a Truncated Cone** S. Chern; G. Lobser; M. Schoonmaker; E. Heyde; C. Liu
9:30 AM-12:30 PM, Daytona 2, **FD-18. Stability and Transition Modeling,** Technical Paper, **53rd AIAA Aerospace Sciences Meeting,** Chair: Edward White, Texas A&M University; Co-Chair: Lawrence DeChant, Sandia National Laboratories/Aerosciences	
9:30-10:00 AM	**DNS Study on Role of Linearly Unstable Modes in Flow Transition** J. Tang; Y. Yan; Y. Dong; C. Liu
10:00-10:30 AM	**Laminar Turbulent Intermittency Models: Determination of Functional Behavior Using an Asymptotic Differential Equation Argument** L.J. DeChant
10:30-11:00 AM	**A Comparison of a Local Correlation-Based Transition Model Coupled with SA and SST Turbulence Models** J. Wang; C. Sheng
11:00-11:30 AM	**Application of the Amplification Factor Transport Transition Model to the Shear Stress Transport Model** J.G. Coder; M.D. Maughmer
11:30-12:00 PM	**A General 3D Relation for Oblique Shocks on Swept Ramps** N.D. Domel
12:00-12:30 PM	**A physics-Based Stress Model** J. Rodio; X. Xiao; H.A. Hassan
9:30 AM-12:30 PM, Sun Ballroom 3, **GNC-11. Aerospace Robotics and Autonomous/Unmanned Systems III,** Technical Paper, **AIAA Guidance, Navigation, and Control Conference,** Chair: Jurek Sasiadek, Carleton University; Co-Chair: David Perez	
9:30-10:00 AM	**Two Dimensional Optimum Path Navigation for Autonomous Parafoil Vehicles in High Altitude Ballooning** S. Lee; J. Conner; A.S. Arena
10:00-10:30 AM	**Three-Dimensional Velocity Obstacle Method for UAV Deconflicting Maneuvers** Y.I. Jenie; E. Van Kampen; C.C. de Visser; J. Ellerbroek; J.M. Hoekstra
10:30-11:00 AM	**Comprehensive Modeling and Analysis of an Unmanned Coaxial Helicopter** X. Yuan; J. Zhu
11:00-11:30 AM	**Tracking a Maneuvering Target with an Underactuated UAV in the SE(3) Space** D. Pylorof; E. Bakolas

9:30 AM-12:30 PM, Miami 1, **GNC-12. Advances in GN&C of Multi-Agent Autonomous Systems**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Chair: Soon-Jo Chung, University of Illinois at Urbana-Champaign; Co-Chair: Naira Hovakimyan, University of Illinois at Urbana-Champaign	
9:30-10:00 AM	**Time-Critical Coordination of Multiple UAVs with Absolute Temporal Constraints** J. Puig; E. Xargay; R. Choe; N. Hovakimyan
10:00-10:30 AM	**Attitude Control and Stabilization of Spacecraft with a Captured Asteroid** S. Bandyopadhyay; S. Chung; F. Hadaegh
10:30-11:00 AM	**Trajectory Generation using Spatial Pythagorean Hodograph Bezier Curves** R. Choe; J. Puig; V. Cichella; E. Xargay; N. Hovakimyan
11:00-11:30 AM	**Collision Avoidance through Path Replanning using Bézier Curves** S.B. Mehdi; R. Choe; V. Cichella; N. Hovakimyan
11:30-12:00 PM	**Swarm Assignment and Trajectory Optimization Using Variable-Swarm, Distributed Auction Assignment and Model Predictive Control** D. Morgan; S. Chung; F.Y. Hadaegh
12:00-12:30 PM	**Collision Avoidance: A Game Theoretic Approach** S. Snyder; N. Hovakimyan
9:30 AM-12:30 PM, Sun Ballroom 5, **GNC-13. Guidance and Control of Autonomous/Unmanned Systems**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Chair: Kevin Bollino, AFOSR/EOARD; Co-Chair: Praveen Shankar, California State Univ	
9:30-10:00 AM	**SDRE Based Guidance and Flight Control of Aircraft Formations** O. Tekinalp; S. Kumbasar
10:00-10:30 AM	**Tight Formation Flight with Feasible Model Predictive Control** F. Almeida
10:30-11:00 AM	**A Fully Parameterizable Implementation of Autonomous Take-off and Landing for a Fixed Wing UAV** T.W. Carnes; T.M. Bakker; R.H. Klenke
11:00-11:30 AM	**A Kalman Filter Based Attitude Heading Reference System Using a Low Cost Inertial Measurement Unit** M. Leccadito; T.M. Bakker; R. Niu; R.H. Klenke
11:30-12:00 PM	**Robust Flight Control System for a Tilt Rotor UAV** G. Di Francesco; E. D'Amato; M. Mattei
12:00-12:30 PM	**Design of Gain Scheduled Stability and Control Augmentation System for Quad-Tilt-Wing UAV** H. Totoki; Y. Ochi; M. Sato; K. Muraoka
9:30 AM-12:30 PM, Sun Ballroom 4, **GNC-14. Adaptive Control of Flight Vehicles**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Chair: Simon Schatz, Institute of Flight System Dynamics; Co-Chair: Tansel Yucelen, Missouri University of Science & Technology	

9:30-10:00 AM	**Output Feedback Concurrent Learning Model Reference Adaptive Control** J.F. Quindlen; G. Chowdhary; J.P. How
10:00-10:30 AM	**Application of a Novel Scalability Notion in Adaptive Control to Various Adaptive Control Frameworks** S.P. Schatz; T. Yucelen; B.C. Gruenwald; F. Holzapfel
10:30-11:00 AM	**Adaptive Fault Tolerant Controller Based on Quasi-Continuous High-Order Sliding Modes** J.A. Davila; J. Cieslak; D. Henry; A. Zolghadri; F. Bejarano
11:00-11:30 AM	**A Direct Uncertainty Minimization Framework in Model Reference Adaptive Control** T. Yucelen; B.C. Gruenwald; J.A. Muse
11:30-12:00 PM	**A Design, Analysis and Verification Framework for Adaptive Flight Control** M. Fravolini; T. Yucelen; B.C. Gruenwald; N.T. Nguyen; W. Daniel
12:00-12:30 PM	**An adaptive compensation strategy of control surfaces free-play** A. Mannarino
9:30 AM-12:30 PM, Sun Ballroom 6, **GNC-15. Missile Guidance III**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Chair: Spilios Theodoulis, French German Research Institute; Co-Chair: Raziye Tekin, ASELSAN Inc	
9:30-10:00 AM	**A New Impact Time Control Guidance Law for Precise Time-on-Target Missile Strike** M.G. Snyder; R.J. Prazenica; R.A. Hull
10:00-10:30 AM	**Blind Evasion by Random-Phase Periodic Maneuvers** R.W. Morgan; J.L. Riel
10:30-11:00 AM	**Satisfying Impact Angle Constraint with Field-of-View Limitations** A. Ratnoo
11:00-11:30 AM	**Impact Time and Angle Control Guidance** S. kumar; D. Ghose
11:30-12:00 PM	**A Composite Guidance for Vertically Launched Dual Range SAM with Side Jet Controls** D. Taur
12:00-12:30 PM	**Cooperative Attack of Multiple Missiles with Ideal-Line-of-Sight-Guidance** H. Li
9:30 AM-12:30 PM, Miami 3, **GT-02. The NASA CRM Model & High Reynolds Number Aerodynamics and Testing (Invited)**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Jürgen Quest, ETW GmbH; Co-Chair: William Kilgore, NASA Langley Research Center	
9:30-10:00 AM	**Validation of Wing Deformation Simulations for the NASA CRM Model using Fluid-Structure Interaction Computations** S. Keye; R. Rudnik
10:00-10:30 AM	**CFD-Aided Model Deformation Corrections of NASA Research Model Wind Tunnel data** K. Yasue; M. Ueno; S. Koga; M. Kohzai

10:30-11:00 AM	**Slotted Wall Interference Investigation in ETW using the NASA CRM model** A. Gorbushin; S. Bosnyakov; S.A. Glazkov; A.V. Llysenkov; S.V. Matyash; A.V. Semenov; J. Quest
11:00-11:30 AM	**Mach Stability Improvements Using an Existing Second Throat Capability at the National Transonic Facility (Invited)** D.T. Chan; S. Balakrishna; E. Walker; S. Goodliff
11:30-12:00 PM	**A Description of the Development, Capabilities, and Operational Status of the Test SLATE Data Acquisition System at the National Transonic Facility** C.J. Cramer; J.A. DeMoss; J.D. Wright; M.G. Asay; S.A. Simmons; L.E. Bobbitt
9:30 AM-12:30 PM, Emerald 1, **GTE-03. Engine Systems I**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Gerard Welch, NASA Glenn Research Center; Co-Chair: Mark Ricklick, CATER: Center for Advanced Turbines & Energy Research	
9:30-10:00 AM	**Optimization of Gas Turbine - Solid Oxide Fuel Cell Systems for Aircraft Power Generation** D.F. Waters; C.P. Cadou
10:00-10:30 AM	**Inverted Gas Turbine Design and Analysis** J.D. Wilson; M.D. Polanka
10:30-11:00 AM	**Preliminary Design Investigation of Electromagnetic Motors for Turbofan-Drive Assist** K. Okai; T. Shinohara; T. Himeno; T. Watanabe; D. Masaki; T. Tagashira; R. Yanagi
11:00-11:30 AM	**Feasibility Study of an Inverse Brayton UAV Propulsion System** N.D. Grannan; E.J. Gutmark
11:30-12:00 PM	**An Off-Design Analysis of an Inverse Brayton Cycle Based UAV Propulsion System** N.D. Grannan; E.J. Gutmark
12:00-12:30 PM	**Advances of Turbomachinery Design Optimization** J.H. Page; R. Watson; Z. Ali; P. Hield; P.G. Tucker
9:30 AM-11:30 AM, Tallahassee 2, **HIS-02. The NACA Centennial: An Assessment**, Panel, **53rd AIAA Aerospace Sciences Meeting (non-paper sessions)**, Chair: Tom Crouch, National Air & Space Museum	
9:30 AM-12:30 PM, Emerald 3, **HSABP-03. Pressure Gain Combustion - Rotating Detonation Engines I**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Dora Musielak, University of Texas at Arlington; Co-Chair: Thomas Kaemming, Innovative Scientific Solutions Incorporated	
9:30-10:00 AM	**Performance Evaluation of a Rotating Detonation Engine with Conical -Shape Tail** K. Ishihara; K. Matsuoka; J. Kasahara; A. Matsuo; I. Funaki
10:00-10:30 AM	**Study of the Experimental Performance of a Rotating Detonation Engine with Nozzled Exhaust Flow** M. Fotia; T.A. Kaemming; J. Hoke; F. Schauer

10:30-11:00 AM	**Experimental Ignition Characteristics of a Rotating Detonation Engine under Backpressured Conditions** M. Fotia; J. Hoke; F. Schauer
11:00-11:30 AM	**Fuel Blending as a Means to Achieve Initiation in a Rotating Detonation Engine** A.C. St. George; R.B. Driscoll; V. Anand; D.E. Munday; E.J. Gutmark
11:30-12:00 PM	**Experimental Measurement of Detonation Cell Size in a Two-Dimensional Facility at High Pressures** C.A. Babbie; P. King; C.A. Stevens; J. Hoke; F. Schauer
12:00-12:30 PM	**Development of a Rotating Detonation Engine Facility at the University of Cincinnati** A.C. St. George; R.B. Driscoll; D.E. Munday; E.J. Gutmark
9:30 AM-12:30 PM, Emerald 8, **HSABP-04. Numerical Analysis of High Speed Air-Breathing Propulsion**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Hassan Hassan, North Carolina State University; Co-Chair: Thomas Smith, Boeing Engineering Operations & Technology	
9:30-10:00 AM	**Simulating Turbulence and Mixing in Supersonic Combustors Using Hybrid RANS/LES** D.M. Peterson; E.A. Hassan
10:00-10:30 AM	**Hybrid Reynolds-Averaged / Large Eddy Simulation of a Cavity Flameholder; Assessment of Modeling Sensitivities** R.A. Baurle
10:30-11:00 AM	**Reduced Order Modeling of Compressible Flows with Unsteady Normal Shock Motion** C.D. Marley; K. Duraisamy; J.F. Driscoll
11:00-11:30 AM	**Performance Analysis of the Atlantis Dynamic Intake System** S.J. Wilson; C.T. Johansen; V. Mravcak
9:30 AM-12:30 PM, Osceola Ballroom 2, **ICC-01. C2 and Beyond: A Look into the Future of Complex Aerospace Command and Control Systems**, Technical Paper, **AIAA Infotech @ Aerospace**, Co-Chair: Michael Sotak, Kratos Defense and Security Solutions; Chair: Jimmie McEver, The Johns Hopkins University Applied Physics Laboratory	
9:30-10:00 AM	**A System-of-Systems Approach for Assessing the Resilience of Reconfigurable Command and Control Networks** H.T. Tran; D.N. Mavris
10:00-10:30 AM	**Utilization of Wind Energy in Optimal Guidance Strategies via Real-Time Control Methodologies** K. Turkoglu; A. Mazzulla
10:30-11:00 AM	**Direct Adaptive Control for Infinite-Dimensional Symmetric Hyperbolic Systems with Application to Controlled Wave-like Behavior** M.J. Balas; S.A. Frost
11:00-11:30 AM	**MAR-CPS: Measurable Augmented Reality for Prototyping Cyber-Physical Systems** S. Omidshafiei; A. Agha-Mohammadi; Y. Chen; N. Üre; J.P. How; J.L. Vian; R. Surati

11:30-12:00 PM	**A System-of-Systems Perspective on Information Fusion Systems: Architecture Representation and Evaluation** A.K. Raz; D.A. DeLaurentis
9:30 AM-12:30 PM, Osceola Ballroom 3, **IS-05. Invited Panel Discussion - Autonomy Research for Civil Aviation: Toward a New Era of Flight**, Panel, **AIAA Infotech @ Aerospace (non-paper sessions)**	
9:30 AM-10:30 AM, Osceola Ballroom A, **LEC-03. ASC Lecture: Micro Aerial Vehicles (MAV): Challenges and Opportunities**, Lecture, **23nd AIAA/AHS Adaptive Structures Conference (non-paper sessions)**, Chair: David McGowan, NASA Langley Research Center; Co-Chair: Ed White, Boeing Engineering Operations & Technology	
9:30 AM-12:30 PM, Sun Ballroom D, **MAT-05. ICME Panel**, Panel, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference (non-paper sessions)**, Chair: John Matlik, Rolls-Royce Corp; Co-Chair: Steven Arnold, University of Heidelberg, Germany; Co-Chair: Michael Sangid, Purdue University	
9:30 AM-12:00 PM, Sarasota 1, **MAT-06. Nanostructured Materials II**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Virginie Rollin, Embry-Riddle Aeronautical University; Co-Chair: David Powell	
9:30-10:00 AM	**Graphene-Carbon Nanotubes Hybrids for Composite Materials** A.F. Avila; G.C. Pereira
10:00-10:30 AM	**Modeling of Fracture in Nano-Particle Reinforced Polymers using the Atomistic J-Integral** A. Akepati; S. Roy; V.U. Unnikrishnan
10:30-11:00 AM	**Aerospace Applications of Nanomaterials for Sustainable Energy** S. Arepalli
11:00-11:30 AM	**Multiscale analysis of polymer nanocomposites considering hyperelasto-plastic behavior** H. Shin; W. Kim; J. Ryu; S. Chang; M. Cho
9:30 AM-12:30 PM, Sarasota 3, **MDO-04. MDO: Supersonic Applications**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Co-Chair: Timothy Takahashi, Arizona State University; Chair: Edward Alyanak, AFRL/RQVC	
9:30-10:00 AM	**Multi-Parameter Performance Evaluation, the Next Step in Conceptual Design Concept Assessment** E.J. Alyanak; D.L. Allison
10:00-10:30 AM	**High Fidelity, Nonlinear, Integrated Nozzle Installation Effects for Numerical Propulsion System Simulation** D.L. Allison; E.J. Alyanak; N.D. Bhagat
10:30-11:00 AM	**Multi-Objective, Multidisciplinary Design Optimization of TSTO Space Planes with RBCC Engines** T. Fujikawa; T. Tsuchiya; S. Tomioka
9:30 AM-12:30 PM, Sun Ballroom 1, **MST-05. Air Traffic Management II**, Technical Paper, **AIAA Modeling and Simulation Technologies Conference**, Chair: Jeffery Schroeder, Federal Aviation Administration	

9:30-10:00 AM	**Study on Validation and Application of Fuel-Burn Estimation** Y. Nakamura; K. Kageyama
10:00-10:30 AM	**Continuous Descent Operation Performance Improvement through Flight Time Reduction** N. Takeichi; J. Ishihara; M. Sato
10:30-11:00 AM	**Arrival Metering Precision Study** T. Prevot; J. Mercer; J. Homola; S.M. Hunt; A.N. Gomez; N. Bienert; F.G. Omar; J. Kraut; C.L. Brasil; M.G. Wu
9:30 AM-12:30 PM, Sun Ballroom 2, **MST-06. Human Factors, Perception, and Cueing**, Technical Paper, **AIAA Modeling and Simulation Technologies Conference**, Chair: Frank Cardullo, State University of NY	
9:30-10:00 AM	**Adaptive State Predictor Based Human Operator Modeling on Longitudinal and Lateral Control** A. Trujillo; I.M. Gregory; L. Hempley
10:00-10:30 AM	**Effects of False Tilt Cues on the Training of Manual Roll Control Skills** P. Zaal; B.T. Sweet
10:30-11:00 AM	**An Algorithm to Improve Ground-Based Spatial Disorientation Training** B. McGrath; B. Lawson; M. Newman; A.H. Rupert
11:00-11:30 AM	**Automatic Air Collision Avoidance System Testing** C. Richardson; T. Hamilton; T. Millet; M. Pacini
11:30-12:00 PM	**Experimental Evaluation of RLS Algorithm for Identification of Time-Varying Neuromuscular Response** M. Olivari; F.M. Nieuwenhuizen; H. Bülthoff; L. Pollini
9:30 AM-12:30 PM, Osceola Ballroom 5, **NDA-03. Uncertainty Quantification and Management I** , Technical Paper, **17th AIAA Non-Deterministic Approaches Conference**, Chair: Girish Modgil, Rolls-Royce Corp; Co-Chair: Benjamin Smarslok, Air Force Reseach Laboratory	
9:30-10:00 AM	**Calibration of Predictor Models Using Multple Validation Experiments** L.G. Crespo; S.P. Kenny; D.P. Giesy
10:00-10:30 AM	**Using Expected Information Gain to Design Aerothermal Model Calibration Experiments** D.C. Villanueva; B.P. Smarslok
10:30-11:00 AM	**Global Sensitivity Analysis for System Response Prediction Using Auxiliary Variable Method** C. Li; S. Mahadevan
11:00-11:30 AM	**Using Bootstrap to Assess Sampling Uncertainty in Fatigue Crack Growth Life** K.S. Bhachu; R.T. Haftka; N. Kim
11:30-12:00 PM	**Uncertainty Quantification of a Rectangular 5:1 Cylinder** J.A. Witteveen; P.S. Omrani; A. Mariotti; M.V. Salvetti
12:00-12:30 PM	**Uncertainty Quantification and Sensitivity Analysis of Aeroservoelastic Stability for a Slender Flight Vehicle** J. Tang; Z. Wu; C. Yang

9:30 AM-11:30 AM, Osceola Ballroom B, **PANEL-03. Improving Business Skills and Business Processes for the Aerospace Technical Community**, Panel, **Forum 360**	
9:30 AM-12:30 PM, Emerald 5, **PC-09. Advanced Combustion Concepts II**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: Wenting Sun, Georgia Institute of Technology; Co-Chair: Robert Pitz, Vanderbilt University	
9:30-10:00 AM	**Low temperature oxidation of methane in a nanosecond pulsed plasma discharge** J.K. Lefkowitz; P. Guo; A. Rousso; Y. Ju
10:00-10:30 AM	**Plasma Assisted MILD Combustion** T. Wada; J.K. Lefkowitz; Y. Ju
10:30-11:00 AM	**On the Role of Translational Nonequilibrium for Hydrogen Air Plasma Assisted Ignition** A. Starikovskiy
11:00-11:30 AM	**Energy balance in surface nanosecond dielectric barrier discharge. Plasma-assisted ignition of heavy hydrocarbons at high pressures.** S.A. Shcherbanev; S.A. Stepanyan; M. Boumehdi; P. Desgroux; G. Vanhove; S. Starikovskaia
11:30-12:00 PM	**The Effect of Ozone Addition on Flame Propagation** X. Gao; Y. Zhang; S. Adusumilli; J.M. Seitzman; W. Sun; T. Ombrello; C.D. Carter
9:30 AM-12:30 PM, Emerald 7, **PC-10. Turbulent Combustion III**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: Adam Steinberg, University of Toronto; Co-Chair: Yiguang Ju, Princeton University	
9:30-10:00 AM	**High-Speed Measurements in Partially-Premixed Swirl Flames at Elevated Temperature and Pressure** C.D. Slabaugh; I.G. Boxx; S. Werner; W. Meier; R.P. Lucht
10:00-10:30 AM	**Large Scale Dynamics and Statistics of the Time-Varying Temperature Field in Turbulent Non-Premixed Jet Flames** T.A. McManus; J.A. Sutton
10:30-11:00 AM	**Simulation Using Flamelet Radiation Modeling** J.J. Doom
11:00-11:30 AM	**Addition of Ammonia to a Bluff-Body Stabilized Flame and Its Effect on NOx Emissions and Static Stability** B. Huelskamp; P. Gokulakrishnan; C. Klingshirn; N.J. Kuprowicz; V. Belovich
11:30-12:00 PM	**Strain Effects in Partially Premixed Methane-air Jet Flames** W.H. Calhoon; K.A. Kemenov
9:30 AM-12:30 PM, Emerald 2, **PDL-02. Aero-Optics**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: Michael Stanek, AFRL/RQVI; Co-Chair: Mark Rennie, University of Notre Dame	
9:30-10:00 AM	**Airborne Aero-Optics Laboratory – Transonic (AAOL-T)** E.J. Jumper; S. Gordeyev; D. Cavalieri; P. Rollins; M. Whiteley; M. Krizo

10:00-10:30 AM	**Aero-Optical Investigation of Transonic Flow Features And Shock Dynamics on Hemisphere-On-Cylinder Turrets** J. Morrida; S. Gordeyev; N.G. De Lucca; E.J. Jumper
10:30-11:00 AM	**Global Unsteady Pressure Fields Over Turrets In-Flight** N.G. De Lucca; S. Gordeyev; E.J. Jumper
11:00-11:30 AM	**Computation of the Aero-Optical Effect of a Helicopter Rotor Wake Using Unsteady RANS and LES** R. Kelly; A. Jemcov; M.R. Rennie; E.J. Jumper; M. Whiteley; D. Goorskey
11:30-12:00 PM	**A Latency-Tolerant Architecture for Airborne Adaptive Optic Systems** W.R. Burns; E.J. Jumper; S. Gordeyev
9:30 AM-12:30 PM, Osceola Ballroom 4, **SCS-03. Packaging and Deployment of Spacecraft Structures**, Technical Paper, **2nd AIAA Spacecraft Structures Conference**, Chair: Whitney Reynolds, Air Force Research Laboratory; Co-Chair: Gyula Greschik, TentGuild Engineering Co	
9:30-10:00 AM	**Wrapping Fold and Deployment Characteristics of Boom-Membrane Integrated Space Structures** H. Sakamoto; H. Furuya; Y. Satou; N. Okuizumi; M. Takai; M.C. Natori
10:00-10:30 AM	**An Examination of Crease Removal in Rigidizable Inflatable Metal-Polymer Laminate Cylinders** G. Secheli; A. Viquerat; V. Lappas
10:30-11:00 AM	**Wrapping Thick Membranes with Slipping Folds** M. Arya; N. Lee; S. Pellegrino
11:00-11:30 AM	**A Basic Construction Concept for Space Structure Systems Using Active Connecting Elements** M.C. Natori; M. Nagasawa; J. Yamada; A. Okuno; H. Yamakawa; K. Higuchi
9:30 AM-12:30 PM, Tampa 2, **SD-06. Supersonic/Hypersonic Systems I** , Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Bryan Glaz, U. S. Army Research Laboratory (APG); Co-Chair: Nathan Falkiewicz, MIT Lincoln Laboratory	
9:30-10:00 AM	**An Overview of the NASA High Speed ASE Project: Aeroelastic Analyses of a Low-Boom Supersonic Configuration** W.A. Silva; A. De La Garza; P. Zink; E.G. Bounajem; J.C. Johnson; M. Buonanno; M.D. Sanetrik; P. Chwalowski; J.R. Florance; S. Yoo; G. Kopasakis; J. Hur; D.M. Christhilf
10:00-10:30 AM	**Response of a Panel to Shock Impingement: Modeling and Comparison with Experiments - Part 2** A. Gogulapati; R. Deshmukh; J.J. McNamara; V. Vyas; X. Wang; M.P. Mignolet; T. Beberniss; S.M. Spottswood; T.G. Eason
10:30-11:00 AM	**Loosely Coupled Time-Marching of Fluid-Thermal-Structural Interactions with Time-Accurate CFD** B.A. Miller; J.J. McNamara

11:00-11:30 AM	**Rapid Prediction of Unsteady Aeroelastic Loads in Shock-Dominated Flows** K. Brouwer; A.R. Crowell; J.J. McNamara
11:30-12:00 PM	**Characterization of Structural Response to Hypersonic Boundary Layer Transition** Z. Riley; R. Deshmukh; B.A. Miller; J.J. McNamara
9:30 AM-12:30 PM, Tampa 3, **SD-07. Cable/Beam Modeling I** , Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Chad Hebert, Sierra Nevada Corporation; Co-Chair: Zahra Sotoudeh, Rensselaer Polytechnic Institute	
9:30-10:00 AM	**Nonlinear Normal Modes in Finite Element Model Validation of Geometrically Nonlinear Flat and Curved Beams** D.A. Ehrhardt; M.S. Allen; R.J. Kuether
10:00-10:30 AM	**Experimental and Theoretical Analysis of Cabled Beams** K.S. Spak; G.S. Agnes; D.J. Inman
10:30-11:00 AM	**Non-linear Sectional Analysis of Composite Beams with Finite Deformation and Hyperelastic Materials** F. Jiang; W. Yu
11:00-11:30 AM	**Nonlinear Geometric Reduced Order Model for the Response of a Beam with a Piezoelectric Actuator** V. Vyas; X. Wang; A. Jain; M.P. Mignolet
11:30-12:00 PM	**Investigation of a Dynamic Finite Element Model for the Nonlinear Response of Fatigue Cracked Structures** P.E. Cooley; J.C. Slater
12:00-12:30 PM	**Application of Transfer Matrix Approach to Modeling and Decentralized Control of Lattice-based Structures** N.B. Cramer; S. Swei; K. Cheung; M. Teodorescu
9:30 AM-12:30 PM, Tampa 1, **STR-07. Special Session: Challenges in the Design of Joined Wings I**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Luciano Demasi, San Diego State University College of Engineering; Co-Chair: Anthony Palazotto, AFIT	
9:30-10:00 AM	**Aerodynamic Optimization Trade Study of a Box-Wing Aircraft Configuration** H. Gagnon; D.W. Zingg
10:00-10:30 AM	**Performance Based MDO of a Joined-Wing Regional Transport Aircraft (For Challenges in the Design of Joined Wings SPECIAL SESSION)** A. Suleman; F. Afonso; J. Vale; F. Lau
10:30-11:00 AM	**Minimum Induced Drag Theorems for Joined Wings, Closed systems, and Generic Biwings: Theory** L. Demasi; G. Monegato; A. Dipace; R. Cavallaro
11:00-11:30 AM	**Minimum Induced Drag Theorems for Joined Wings, Closed Systems, and Generic Biwings: Results** L. Demasi; G. Monegato; E. Rizzo; R. Cavallaro; A. Dipace

11:30-12:00 PM	**Reduced Order Methods and Algorithms for Structurally Nonlinear Joined Wings** N. Teunisse; P. Tiso; L. Demasi; R. Cavallaro
12:00-12:30 PM	**Design of a prototype of light amphibious PrandtlPlane** A. Frediani; V. Cipolla; F. Oliviero
9:30 AM-12:30 PM, Tallahassee 3, **STR-08. Special Sessions in Honor of Prof. Harry H. Hilton II**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Co-Chair: Olesya Zhupanska, The University of Iowa; Co-Chair: Pier Marzocca, Clarkson University; Chair: Robert Sierakowski, Air Force Reseach Laboratory	
9:30-10:00 AM	**Molecular Dynamics and Finite Element Investigation of Polymer Interphase Effects on Effective Stiffness of Wavy Aligned Carbon Nanotube Composites** Y. Atescan; C.M. Hadden; B.L. Wardle; G.M. Odegard; H. Cebeci
10:00-10:30 AM	**On the Closed-Form Constitutive Relations for Damageable Elasto-Viscoplastic Materials** L. Zhang; W. Yu
10:30-11:00 AM	**Multiscale Modeling of the Radar Signature of a Composite Aircraft** K. Zhang; J. Jin; P.H. Geubelle
11:00-11:30 AM	**Flight Vehicle Structural Design Processes for a Common Bulkhead and an MPCV Spacecraft Adapter** P. Aggarwal; P.V. Hull
11:30-12:00 PM	**Multiscale Modeling of a Mechanophore-embedded Nanocomposite for Damage Initiation Detection** B. Koo; Y. Liu; A. Chattopadhyay; L. Dai
12:00-12:30 PM	**Further Results on the Use of Material Tailoring to Improve Buckling Capacity of Elliptical Composite Cylinders** M.W. Hyer
9:30 AM-12:30 PM, Sun Ballroom B, **TP-04. Heat Pipes/Heat Transfer I** , Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Elliott Short, Raytheon Company; Co-Chair: Micah Howard, Sandia National Laboratories	
9:30-10:00 AM	**Analytical Model for Transient Loop Heat Pipe Operation** T.T. Hoang; R.W. Baldauff; D.R. Mahony
10:00-10:30 AM	**Non-Intrusive Fluid Flow Measurement Method for Loop Heat Pipes** T.T. Hoang; R.W. Baldauff; K.H. Cheung; D.R. Mahony
10:30-11:00 AM	**Multiple-Evaporator Loop Heat Pipe** T.T. Hoang; J. Ku
11:00-11:30 AM	**On the Modelling of Evaporating Sprays Impinging onto Solid Surfaces** C. Rodrigues; J.M. Barata; A.R. Silva
11:30-12:00 PM	**Numerical Simulation of a stationery 3D Cooling Channel using periodic condition** H.M. Alhajeri; A. Addali

12:00-12:30 PM	**Experimental Assessment of Vapour Chamber Heater Spreader Implementation in Avionic Cooling** A.B. Jones; R. Chen
9:30 AM-12:30 PM, Osceola Ballroom 1, **UMS-02. Unmanned Systems: Technologies and Applications I**, Technical Paper, **AIAA Infotech @ Aerospace**, Chair: Brian Argrow, University of Colorado Boulder	
9:30-10:00 AM	**Motion Analysis of Captive Platform System Constructed from Airship and Tether** K. Chiba; S. Satori; R. Mitsuhashi; J. Sasaki; R. Akiba
10:00-10:30 AM	**Control for Suppressing Roll Motion of Outdoor Blimp Robots for Disaster Surveillance** H. Saiki; T. Kobayashi; T. Fukao; T. Urakubo; K. Araiba; H. Amano
10:30-11:00 AM	**Autonomous Navigation of UAV through GPS-Denied Indoor Environment with Obstacles** E. Schnipke; S. Reidling; J. Meiring; W. Jeffers; M. Hashemi; R. Tan; A. Nemati; M. Kumar
11:00-11:30 AM	**Development of a Low-Cost Experimental Quadcopter Testbed using an Arduino controller for Video Surveillance** K. Turkoglu; A. Ji
11:30-12:00 PM	**Autonomous Navigation of a Quadrotor in Indoor Environments for Surveillance and Reconnaissance** S. Bhandari; S. Viska; H. Shah; C. Chen; G. Tonini; S. Kline
12:00-12:30 PM	**System Architecture, Development and Results of the Embry-Riddle Aeronautical University Maritime RobotX Platform** C.J. Hockley; T.A. Zuercher; C.L. Kennedy; G.A. Gamble; H.V. Patel; P. Currier; E. Coyle; C. Reinholtz
9:30 AM-12:30 PM, Emerald 4, **WE-05. Vertical Axis Wind Turbine (VAWT) Research**, Technical Paper, **33rd Wind Energy Symposium**, Co-Chair: D. Todd Griffith, ; Chair: Carlos Simao Ferreira	
9:30-10:00 AM	**Combined structural optimization and aeroelastic analysis of a Vertical Axis Wind Turbine** B. Roscher; C. Simao Ferreira; L. Bernhammer; H.A. Madsen; D. Griffith; B. Stoevesandt
10:00-10:30 AM	**Post-stall airfoil performance and vertical-axis wind turbines** J. Graham; J. Peiro; J.M. Rainbird
10:30-11:00 AM	**Efficient Aerodynamic Shape Optimization of VAWT Airfoil and Its Validation** W. Yamazaki; Y. Arakawa
11:00-11:30 AM	**Airfoil optimization for stall regulated vertical axis wind turbines** C. Simao Ferreira; M.F. Barone; A. Zanon; R. Kemp; P. Giannattasio
11:30-12:00 PM	**Dynamic Stall on Vertical Axis Wind Turbines** D. Casteleim; G. Tescione; D. Ragni; C. Simao Ferreira
9:30 AM-12:30 PM, Emerald 6, **WE-06. Wind Farm and Turbine Wake Interactions II**, Technical Paper, **33rd Wind Energy Symposium**, Chair: David Maniaci, Sandia National Laboratories; Co-Chair: Thomas Herges	

9:30-10:00 AM	**A Comparison of the Dynamic Wake Meandering Model, Large-Eddy Simulation, and Field Data at the Egmond aan Zee Offshore Wind Plant** M.J. Churchfield; S. Lee; P.J. Moriarty; Y. Hao; M.A. Lackner; R. Barthelmie; J.K. Lundquist; G. Oxley
10:00-10:30 AM	**A Modeling Framework for Wind Farm Analysis: Wind Turbine Wake Interactions** A. Ghate; S.K. Lele
10:30-11:00 AM	**A Comparison of the NREL 5-MW Wake Characteristics Using Both SOWFA and OVERFLOW2** E.W. Anderson; R. Chow; C.P. Van Dam
11:00-11:30 AM	**Actuator Line Wind Turbine Simulations in Atmospheric Turbulent Flows using Spectral Element Method** T. Chatterjee; Y. Peet
11:30-12:00 PM	**A Parabolic Method without Pressure Approximations for Wind Turbines** A. Mittal; W. Briley; L.K. Taylor; K. Sreenivas
12:00-12:30 PM	**Preliminary Study on Wake Interaction Effects Using a Free Vortex Wake Model** K. Shaler; J.J. McNamara; K. Kecskemety
10:30 AM-12:30 PM, Osceola Ballroom 6, **AS-02. Shape Memory Alloy Applications**, Technical Paper, **23nd AIAA/AHS Adaptive Structures Conference**, Chair: Dimitris Lagoudas, Texas A&M University; Co-Chair: Jinsong Leng	
10:30-11:00 AM	**Development of a SMA-Based, Slat-Gap Filler for Airframe Noise Reduction** T.L. Turner; D.L. Long
11:00-11:30 AM	**Aero−structural Optimization of Shape Memory Alloy-based Wing Morphing via a Class/Shape Transformation Approach** P.B. Leal; D.J. Hartl; C.L. Bertagne
11:30-12:00 PM	**Design and Testing of a Shape Memory Alloy Buoyancy Engine for Unmanned Underwater Vehicles** A.J. Angilella; F. Gandhi; T. Miller
12:00-12:30 PM	**Development of a Twisting Wing Powered by a Shape Memory Alloy Actuator** C.a. Stein; D.J. Hartl; L. Hodge; J. Mabe; J. Herrington; R. Saunders
12:30 PM-2:00 PM, Osceola Ballroom CD, **LUNCH-02. Recognition Luncheon: Celebrating Achievements in Aerospace Sciences and Information Systems**, Lunch, **Forum**	
2:00 PM-5:30 PM, Miami 2, **AA-05. Jet Noise Measurements II**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Clifford Brown, NASA Glenn Research Center	
2:00-2:30 PM	**An Investigation of Transonic Resonance in a Mach 2.2 Round Convergent-Divergent Nozzle** V.F. Dippold; K.Q. Zaman
2:30-3:00 PM	**Measuring Jet Noise Source Locations with Acoustic Beamforming** N.P. Breen; K.K. Ahuja
3:00-3:30 PM	**A Study of the Noise Source Mechanisms in an Excited Mach 0.9 Jet - Complementary Experimental and Computational Analysis** M.B. Crawley; R. Speth; M. Samimy; D.V. Gaitonde

3:30-4:00 PM	**The Properties and Localizations of Acoustic Sources of High Speed Jets** P. Kan; J. Lewalle; Z.P. Berger; M.N. Glauser
4:00-4:30 PM	**Comparison of Spatial and Temporal Resolution on High Speed Axisymmetric Jets** M.G. Berry; A.S. Magstadt; Z.P. Berger; P.R. Shea; M.N. Glauser; C.J. Ruscher; S.P. Gogineni
4:30-5:00 PM	**Investigation of "Loud" Modes in a High-Speed Jet to Identify Noise-Producing Events** Z.P. Berger; M.G. Berry; P.R. Shea; M.N. Glauser; P. Kan; J. Lewalle; C.J. Ruscher; S.P. Gogineni
2:00 PM-5:30 PM, Sun Ballroom C, **AA-06. General Acoustics**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Jeffrey Peters, Rolls-Royce Corp	
2:00-2:30 PM	**Phase-Based Adaptive Estimation of Magnitude-Squared Coherence Between Turbofan Internal Sensors and Far-Field Microphone Signals** J.H. Miles
2:30-3:00 PM	**Assessment of Geometry and In-Flow Effects on Contra-Rotating Open Rotor Broadband Noise Predictions** N.S. Zawodny; D.M. Nark; D. Boyd
3:00-3:30 PM	**Normal Incidence Acoustic Transmission Loss of Perforated Plates Subject to Bias Flow** V.C. Phong; D. Papamoschou
3:30-4:00 PM	**A Multi-Stage Surrogate Modeling Approach to Examine Vehicle-Level Technology Impacts at the Airport-Level** J. Bernardo; C. Besson; H. Pfaender; J. Schutte; D.N. Mavris
4:00-4:30 PM	**Multiple Aircraft Approach Path Optimization for Noise Abatement Considering the Influence of Meteorological Conditions on Sound Propagation** A. Andreeva-Mori; H. Ishii
4:30-5:00 PM	**Analysis of sonic boom propagation based on the KZK equation** J. Takeno; T. Misaka; K. Shimoyama; S. Obayashi
2:00 PM-5:30 PM, Captiva 1, **AFM-07. AFM Best Student Paper Competition III**, Technical Paper, **AIAA Atmospheric Flight Mechanics Conference**, Chair: Francis Priolo, Millennium Engineering and Integration Company	
2:00-2:30 PM	**Suppression of Wing Rock in Slender Delta Wing by Horizontal Strakes** S.R. Bakaul; Y. Wang; W. Guangxing
2:30-3:00 PM	**Quadrotor System Identification Using the Multivariate Multiplex B-Spline** T. Visser; C.C. de Visser; E. Van Kampen
3:00-3:30 PM	**Non-Iterative Adaptive Limit and Control Margin Estimation with Concurrent Learning** G. Gursoy; I. Yavrucuk
3:30-4:00 PM	**Wing Sensor Placement for Gust Disturbance Rejection** L. Castano; S. Airoldi; T. McKenna; J. Humbert

2:00 PM-5:30 PM, Captiva 2, **AFM-08. Aircraft Flight Dynamics, Handling Qualities and Performance III**, Technical Paper, **AIAA Atmospheric Flight Mechanics Conference**, Chair: Daniel Murri, NASA Langley Research Center; Co-Chair: Bruce Alstrom, International Test Pilot School	
2:00-2:30 PM	**Evaluation of Aircraft Model Upset Behaviour Using Wind Tunnel Manoeuvre Rig** S.A. Araujo-Estrada; M.H. Lowenberg; S. Neild; M. Goman
2:30-3:00 PM	**The Effects of Stick Force Gradient on Pilot Mental Demand** M. Bromfield; G. Gratton; M. Young
3:00-3:30 PM	**Improved Obstacle Clearance Capability of a Transport Aircraft Using a Modified Climb-Out Flight Profile** L.V. Bays; K.E. Halpin
3:30-4:00 PM	**Effects of control surface location on control authority of low-aspect-ratio wings in low Reynolds number flight conditions** R.S. O'Donnell; K. Mohseni
4:00-4:30 PM	**Power Efficient Trim Solutions for the Hybrid Wing Body in Approach Conditions** D.C. Garmendia; D.N. Mavris
4:30-5:00 PM	**Aircraft Input Prediction in the Presence of Spatially Varying Wind Field** J. Kampoon; W. Okolo; S. Erturk; O. Daskiran; A. Dogan
5:00-5:30 PM	**Wind Field Estimation and Its Utilization in Trajectory Prediction** J. Kampoon; W. Okolo; S. Erturk; O. Daskiran; A. Dogan
2:00 PM-5:30 PM, Destin 1, **APA-15. Aerodynamic Design: Analysis, Methodologies & Optimization Techniques II**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: John Latz, Northrop Grumman Aerospace Systems; Co-Chair: Douglas Hunsaker, Utah State University	
2:00-2:30 PM	**Optimization of Waverider-Derived Crew Reentry Vehicles using a Rapid Aerodynamics Analysis Approach** M. Lobbia
2:30-3:00 PM	**Shape Optimization of an Airfoil in Ground Effect for Application to WIG Craft** Y. He; Q. Qu; R.K. Agarwal
3:00-3:30 PM	**Surrogate-Based Airfoil Design with Multi-Level Optimization and Adjoint Sensitivity** Y. Tesfahunegn; S. Koziel; L.T. Leifsson
3:30-4:00 PM	**Sensitivity Analysis for Uncertainty Propagation and Robust Design** D.I. Papadimitriou; C. Papadimitriou
4:00-4:30 PM	**Review of Aerofoil Parameterisation Methods for Aerodynamic Shape Optimisation** D.A. Masters; N.J. Taylor; T. Rendall; C.B. Allen; D.J. Poole
4:30-5:00 PM	**Optimal Domain Element Shapes for Free-Form Aerodynamic Shape Control** D.J. Poole; C.B. Allen; T. Rendall

5:00-5:30 PM	**Multi-objective aerodynamic optimization of supercritical wing with substantial pressure constraints** Z. Tong; Y. Zhang; H. Chen
2:00 PM-5:30 PM, Destin 2, **APA-16. Aerodynamic-Structural Dynamics Interaction II**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Crystal Pasiliao, AFRL/RWWV; Co-Chair: Chunhua Sheng, University of Toledo	
2:00-2:30 PM	**Combined translational and rotational galloping of square cylinders in cross-flow at low Reynolds numbers** B. Battaglia; S. Etienne; A. Hay; D. Pelletier
2:30-3:00 PM	**An Efficient Time-variant Fluid-Structure Interaction Analysis based on Coupling in Frequency Domain** S. Yi; S. Choi; D. Im; D. Lee
3:00-3:30 PM	**Nonlinear Aeroelastic Analysis of High Aspect-Ratio Wings Using Immersed Boundary Technique** K. Gobal; R.V. Grandhi
3:30-4:00 PM	**Comparison of Viscous and Inviscid Unsteady Aerodynamic Loads for Aeroelastic Analyses** R.N. Ihi; J.F. Azevedo
4:00-4:30 PM	**Wing Flutter Computation Using Modified Spectral Volume Method for Hybrid Unstructured Mesh** Y. Sawaki; T. Haga; Y. Ogino; K. Sawada
4:30-5:00 PM	**Coupling of the Edge CFD Solver with External Solvers** A. Jirasek; O. Amoignon; P. Eliasson
2:00 PM-5:30 PM, Naples 2, **APA-17. Airfoil/Wing/Configuration Aerodynamics I**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Martiqua Post, USAF Academy; Co-Chair: Jonathan Murray, Sandia National Laboratories	
2:00-2:30 PM	**Surrogates for the Aerodynamic Coefficients of Supersonic Airfoils** M.Y. Ahmed
2:30-3:00 PM	**Computational Aerodynamic Analysis of Annular Wing Unmanned Aerial Vehicle** A.A. Kanoria; K. Panchal; M. Damodaran
3:00-3:30 PM	**Design of High Wing Loading Compact Electric Airplane Utilizing Co-Flow Jet Flow Control** A.M. Lefebvre; G. Zha
3:30-4:00 PM	**Computed Effect of Wing Tip Configuration on Wing Load Characteristics of a High Speed Aircraft** J. Masud; O. Khan
4:00-4:30 PM	**Experimental and Numerical Research on Aerodynamic Characteristics of Rectangular Fin Mounted Vertically over the Wing** T. Omori; Y. Sunada; T. Imamura
2:00 PM-5:30 PM, Naples 1, **APA-18. Special Session: Space Launch System (SLS) II**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Khaled Abdol-Hamid, NASA Langley Research Center; Co-Chair: Jeremy Pinier, NASA Langley Research Center	

2:00-2:30 PM	**Space Launch System Liftoff and Transition Aerodynamic Characterization in the NASA Langley 14x22' Subsonic Wind Tunnel** J.T. Pinier; G.E. Erickson; J. Paulson; W.G. Tomek; D. Bennett; J.A. Blevins
2:30-3:00 PM	**Results from DES Simulations of an SLS Variant at Liftoff Conditions with Comparison to Experiment** S.E. Krist; F. Ghaffari
3:00-3:30 PM	**Reduced-order Model for NASA Space Launch System Liftoff Aerodynamics** H.A. Carlson; R. Verberg
3:30-4:00 PM	**CFD Simulations of the Space Launch System Ascent Aerodynamics and Booster Separation** S.E. Rogers; D.J. Dalle; W.M. Chan
4:00-4:30 PM	**Aerodynamic Modeling and Database Development of the Space Launch System Booster Separation** B.N. Pamadi; J. Pei; C.R. Gumbert; L.L. Green; J. Housman; J. Onufer; C.C. Kiris
4:30-5:00 PM	**Development of an Aerodynamic Database for the SLS Service Module** **Panel Jettison Event Utilizing Inviscid CFD and MATLAB** L.H. Hall; M.P. Applebaum; W.M. Eppard; D.C. Purinton
2:00 PM-5:30 PM, Sun Ballroom A, **APA-19/FD-19. Flow Control: Fluidic Oscillators**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: Edward Whalen, Boeing Engineering Operations & Technology; Co-Chair: Doug Lacy, Boeing Commercial Airplanes	
2:00-2:30 PM	**Experimental Comparison between the Flow Field of Two Common Fluidic Oscillator Designs** F. Ostermann; R. Woszidlo; C. Nayeri; C.O. Paschereit
2:30-3:00 PM	**Experimental Investigation of Compressibility Effects in a Fluidic Oscillator** F. von Gosen; F. Ostermann; R. Woszidlo; C. Nayeri; C.O. Paschereit
3:00-3:30 PM	**Control of Separation on a Swept Wing using Fluidic Oscillators** P. Tewes; L. Taubert
3:30-4:00 PM	**Performance Enhancement of a Full-Scale Vertical Tail Model Equipped with Active Flow Control** E.A. Whalen; D.S. Lacy; J.C. Lin; M.Y. Andino; A.E. Washburn; E.C. Graff; I.J. Wygnanski
4:00-4:30 PM	**Flow Separation Control on a Full-Scale Vertical Tail Model using Sweeping Jet Actuators** M.Y. Andino; J.C. Lin; A.E. Washburn; E.A. Whalen; E.C. Graff; I.J. Wygnanski
4:30-5:00 PM	**Experimental Investigation of the Flow Field behind a Bluff Body Equipped with Fluidic Oscillators** H. Schmidt; R. Woszidlo; C. Nayeri; C.O. Paschereit

2:00 PM-5:30 PM, Osceola Ballroom 6, **AS-03. Morphing Applications**, Technical Paper, **23nd AIAA/AHS Adaptive Structures Conference**, Chair: Farhan Gandhi, Rensselaer Polytechnic Inst; Co-Chair: Travis Turner, NASA-Langley Research Center	
2:00-2:30 PM	**Extremely Anisotropic Multi-functional Skin for Morphing Applications** F. Previtali; T. Delpero; A. Bergamini; A.F. Arrieta; P. Ermanni
2:30-3:00 PM	**A Bi-Stable System for Rotor Span Extension in Rotary-Wing Micro Aerial Vehicles** M. Misiorowski; M. Pontecorvo; F. Gandhi
3:00-3:30 PM	**Efficient Active Rotor Concepts for In-Plane Noise Reduction** E. Corle; S. Schmitz; T. Yang; K.S. Brentner
3:30-4:00 PM	**Design and manufacturing of morphing fan blades for experimental investigations in a cascaded wind tunnel** H.P. Monner; O. Huxdorf; J. Riemenschneider; R. Keimer
4:00-4:30 PM	**Experimental Evaluation of the Morphing Leading Edge Concept** J. Sodja; M.J. Martinez; J.C. Simpson; R. De Breuker
4:30-5:00 PM	**Development and Testing of a Corrugated Skin for a Camber Morphing Aerofoil** R. Navaratne
5:00-5:30 PM	**New Concept Bi-stable Structure: Adaptive Saddle-shaped Bi-stable Panel** J. Lee; J. Ryu; H. Lee; M. Cho
2:00 PM-5:30 PM, Osceola Ballroom 3, **DA-01. Digital Avionics**, Technical Paper, **AIAA Infotech @ Aerospace**, Chair: James Rankin, The University of Arkansas	
2:00-2:30 PM	**Human-in-the-loop Evaluation of an Information Management and Notification System to Improve Aircraft State Awareness** P. Duan; M. Yocius; M. Miltner; J. Engler; T. Schnell; M. Uijt De Haag
2:30-3:00 PM	**A Formally Verified Conflict Detection Algorithm for Polynomial Trajectories** A. Narkawicz; C. Munoz
3:00-3:30 PM	**TCAS Compatibility of Advanced Airborne Separation Assurance System Operations** H. Lenz
3:30-4:00 PM	**Application of Unified Departure Operation Spacing to a Large Hub Airport** G. Schwoch
4:00-4:30 PM	**Developing an Attitude and Heading Reference System based on Advanced MEMS Gyros** A. Simonetti; D. Accardo; D. Domenico; P. Calcagni
4:30-5:00 PM	**Communication of Target Trajectory and Wind Information to Improve Airborne Interval Management Spacing Performance** L.A. Weitz; W. Penhallegon; B. Lascara; H. Stassen; R. Katkin
2:00 PM-5:30 PM, Sarasota 2, **DE-02. Design Education/Design Process**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Jian Wang, Kingston University; Co-Chair: Jon Cutshall, Southwest Research Institute	

2:00-2:30 PM	**Mars Mission Design Strategy Board Game to Inspire STEM Students** R.M. Pidaparti
2:30-3:00 PM	**Leveraging Open Standards and Credit-Card-Sized Linux Computers in Embedded Control & Robotics Education** T. Bewley; J. Strawson; S. Ostovari; H.C. Briggs
3:00-3:30 PM	**A Survey of Integrated Tools for Air Vehicle Design, Part I** H.C. Briggs
3:30-4:00 PM	**A Survey of Integrated Tools for Air Vehicle Design, Part II** H.C. Briggs
4:00-4:30 PM	**Formulation and Applications of a Probabilistic Pareto Chart** K.A. Hart; B.A. Steinfeldt; R.D. Braun
4:30-5:00 PM	**Case Studies: Design and Optimization of the Oxidizer Pump in the Turbopump System in a Knowledge-based, CAD/CAE Integration Environment** Y. Liao; X. Tong; Y. Ding; B. Dong
2:00 PM-5:30 PM, Tallahassee 2, **FD-20. Actuators and Active Flow Control,** Technical Paper, **53rd AIAA Aerospace Sciences Meeting,** Co-Chair: Philip Morgan, Ohio Aerospace Institute; Co-Chair: David Schatzman, Science and Technology Corporation	
2:00-2:30 PM	**A Combined Type of a Flow Control Actuator Composed of the Synthetic Jet and Vortex Generator** Y. Ono; Y. Kameya; M. Motosuke; S. Honami
2:30-3:00 PM	**Axisymmetric Synthetic Jets: Modeling of the Far-field Momentum Flux** X. Xia; K. Mohseni
3:00-3:30 PM	**Suction and Oscillatory Blowing Interaction with Boundary Layers** D.M. Schatzman; J. Wilson; L. Maron; V. Palei; A. Seifert; E. Arad
3:30-4:00 PM	**High-Accuracy Simulations of Robust LCO Control Using Synthetic Jet Actuators** L.D. Nguyen; V.V. Golubev; W. Mackunis; N. Ramos; C.L. Pasiliao
4:00-4:30 PM	**Active Flow Control to Improve the Outer-Wing Performance during Take-Off** C. Huehne; P. Scholz
4:30-5:00 PM	**Flow Control for NACA 4418Airfoil Using an "Active Slat"** T.M. Tawfik; B. Elhadidi; M.M. Abdelrahman
2:00 PM-5:30 PM, Sanibel 1, **FD-21. CFD Methods IV,** Technical Paper, **53rd AIAA Aerospace Sciences Meeting,** Chair: Axel Probst, DGLR	
2:00-2:30 PM	**Grid Convergence Study on a Finite Volume Code NSAWET** Z. LI; H. Chen; Y. Zhang; S. Fu
2:30-3:00 PM	**Azure: An Advanced CFD Software Suite Based on High-Resolution and High-Order Methods** D. Drikakis; A.F. Antoniadis; P. Tsoutsanis; I. Kokkinakis; Z. Rana

3:00-3:30 PM	**The Performance Evaluation of an Improved Finite Volume Method for Solving the Navier Stokes Equation** F. Ferguson; H.F. Mrema; M. Dhanasar
3:30-4:00 PM	**A Low-Dissipation Low-Dispersion Second-Order Scheme for Unstructured Finite-Volume Flow Solvers** J. Löwe; A. Probst; T. Knopp; R. Kessler
4:00-4:30 PM	**Scale-Resolving Simulations with a Low-Dissipation Low-Dispersion Second-Order Scheme for Unstructured Finite-Volume Flow Solvers** A. Probst; J. Löwe; S. Reuss; T. Knopp; R. Kessler
4:30-5:00 PM	**Investigation on Hypersonic Aerodynamics Using Numerical and Analytical Methods** W. Luo; D. Li; J. Xiang
5:00-5:30 PM	**A Verification Driven Process for Rapid Development of CFD Software** M.C. Galbraith; S. Allmaras; D.L. Darmofal
2:00 PM-5:30 PM, Sanibel 2, **FD-22. Discontinuous Galerkin Methods II**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: John Ekaterinaris, FORTH/IACM; Co-Chair: Krzysztof Fidkowski, University of Michigan	
2:00-2:30 PM	**High-order unstructured grid generation and Discontinuous Galerkin discretization applied to a 3D high-lift configuration** R. Hartmann; T. Leicht
2:30-3:00 PM	**High-order Discontinuous Galerkin Simulations on Moving Domains using ALE Formulations and Local Remeshing and Projections** L. Wang; P. Persson
3:00-3:30 PM	**A mixed continuous/discontinuous finite element discretization of the incompressible NS equations** N.A. Kyriazis; J.A. Ekaterinaris
3:30-4:00 PM	**OpenACC-based GPU Acceleration of a *p*-multigrid Discontinuous Galerkin Method for Compressible Flows on 3D Unstructured Grids** J. Lou; Y. Xia; L. Luo; H. Luo; J.R. Edwards; F. Mueller
4:00-4:30 PM	**Discontinuous High-Order Finite-Volume/Finite-Element Method for Inviscid Compressible Flows** A. Ramezani; G. Stipcich; L. Remaki
2:00 PM-5:30 PM, Sanibel 3, **FD-23. Flow Control (Fundamentals and Technology) I**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Daniel Miller, Lockheed Martin Aeronautics; Co-Chair: Farrukh Alvi, Florida State University	
2:00-2:30 PM	**Flow Control of Unsteadiness in the Wake of a Turbine Blade** M. Irsch; R.L. Davis; J. Clark; G. Paniagua
2:30-3:00 PM	**Active flow control on an Ahmed body - An experimental study** J.W. McNally; F.S. Alvi; N. Mazellier; A. Kourta
3:00-3:30 PM	**Drag Reduction Control for Flow over a Hump with Surface-Mounted Thermoacoustic Actuator** C. Yeh; P.M. Munday; K. Taira; M.J. Munson

3:30-4:00 PM	**Unsteady Aerodynamic Loads Effected by Flow Control on a Moving Axisymmetric Bluff Body** T.J. Lambert; B. Vukasinovic; A. Glezer
4:00-4:30 PM	**Investigation of Flow Modifications Induced by an Undulating Airfoil Surface** G. Spencer; J. Krofta; R.P. LeBeau; M.W. McQuilling
4:30-5:00 PM	**Aircraft Carrier Burble Mitigation With Alternating Current Dielectric Barrier Discharge Plasma Actuators** B.C. Munguia; N. Bui; B. Lewis; D. Richie
2:00 PM-5:30 PM, Daytona 1, **FD-24. High-Order Methods II**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: William Dawes, Cambridge University	
2:00-2:30 PM	**A High-Order Method for Solving Unsteady Incompressible Navier-Stokes Equations with Implicit Time Stepping on Unstructured Grids** C. Cox; C. Liang; M.W. Plesniak
2:30-3:00 PM	**Large-Eddy Simulation of a Supersonic Jet using High-Order Flux Reconstruction Scheme** T. Haga; S. Tsutsumi; S. Kawai; R. Takaki
3:00-3:30 PM	**A conservative cutcell method with adaptive mesh refinement for large eddy simulation of compressible flows** B. Muralidharan; S. Menon
3:30-4:00 PM	**Flow simulation system based on high order space-time extension of flux reconstruction method** Y. LU; K. Liu; W.N. Dawes
4:00-4:30 PM	**Aspects of the Flux Correction Method for Solving the Navier-Stokes Equations on Unstructured Meshes** D. Work; A.J. Katz
4:30-5:00 PM	**High-Order Methods for Three-Dimensional Strand-Cartesian Grids** O. Tong; A.J. Katz; A.M. Wissink; J. Sitaraman
2:00 PM-5:30 PM, Tallahassee 1, **FD-25. Hypersonic Boundary Layer Transition I**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Lian Duan, Missouri University of Science and Technology	
2:00-2:30 PM	**Acoustic Radiation from High-Speed Turbulent Boundary Layers in a Tunnel-like Environment** L. Duan; M.M. Choudhari; C. Zhang
2:30-3:00 PM	**Parametric study on stabilization of hypersonic boundary layer waves using 2-D surface roughness** K. Fong; X. Wang; X. Zhong
3:00-3:30 PM	**Linearized Navier-Stokes Simulations of the Spatial Stability of a Hypersonic Boundary-Layer on a Flared Cone** L. Salemi; H.F. Fasel
3:30-4:00 PM	**Numerical Investigation of Laminar-Turbulent Transition for a Flared Cone at Mach 6** J. Sivasubramanian; H.F. Fasel
2:00 PM-5:30 PM, Daytona 2, **FD-26. Jets, Plumes, & Reacting Flows**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: Gregory Blaisdell, Purdue University; Chair: Corey Bourassa, GE Aviation	

2:00-2:30 PM	**Computational Fluid Dynamics Simulation of United Launch Alliance Delta IV Hydrogen Plume Mitigation Strategies** S.A. Guimond; M. Ni; N. Voce; A. Kassab; S. Song; Z. Richards; E. Divo
2:30-3:00 PM	**Rocket Plume Modeling** C. Cai
3:00-3:30 PM	**Implementation of Thermochemistry and Chemical Kinetics in a GPU-based CFD Code** B. Taylor; D.A. Schwer; A.T. Corrigan
3:30-4:00 PM	**Large-Eddy Simulation of Coaxial LN2/GH2 Injection at Trans- and Supercritical Conditions** H. Müller; M. Pfitzner; J. Matheis; S. Hickel
4:00-4:30 PM	**Large Eddy Simulation of Flame Flashback in Swirling Premixed CH4/H2-Air Flames** C. Lietz; V. Raman
2:00 PM-5:00 PM, Sun Ballroom 3, **GNC-16. Aerospace Robotics and Autonomous/Unmanned Systems IV**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Chair: Jurek Sasiadek, Carleton University; Co-Chair: David Perez	
2:00-2:30 PM	**Real-Time Guidance of Quadrotor for Obstacle Mapping Using Vision System** J. Park; Y. Kim
2:30-3:00 PM	**Image-based Visual Servoing Framework for a Multirotor UAV using Sampling-based Path Planning** S. Cho; D. Lee; D. Shim
3:00-3:30 PM	**UAV Circumnavigation under a GPS-denied Environment: Algorithms and Experiments** Y. Cao; D. Kingston; S. Rasmussen
3:30-4:00 PM	**Vision Based Obstacle Detection and Avoidance for UAVs Using Image Segmentation** P. Agrawal; A. Ratnoo; D. Ghose
2:00 PM-5:30 PM, Miami 1, **GNC-17. Lander Technology Development at NASA II**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Chair: John Carson, NASA Jet Propulsion Laboratory; Co-Chair: Nikolas Trawny, Jet Propulsion Laboratory	
2:00-2:30 PM	**Project Morpheus: Tailored Systems Engineering of a Terrestrial Flight Testbed for Maturing NASA Lander Technologies** J.L. Devolites; J.B. Olansen
2:30-3:00 PM	**Interpolation-Enhanced Powered Descent Guidance for Onboard Nominal, Off-Nominal, and Multi-X Scenarios** D.P. Scharf; S.R. Ploen; B.A. Acikmese
3:00-3:30 PM	**Real-Time Terrain Relative Navigation Test Results from a Relevant Environment for Mars Landing** A.E. Johnson; Y. Cheng; J.F. Montgomery; N. Trawny; B. Tweddle; J.X. Zheng
3:30-4:00 PM	**The Mighty Eagle Vertical Testbed** M. Hannan; T.G. McGee; G. Chavers; J. Adam; L. Kennedy; J. Moore; G. Frady; E. Ordonez; D. Rickman; C.M. Becker; J. Eliser; P.A. O'Leary

4:00-4:30 PM	**APLNav: Development Status of an Onboard Passive Optical Terrain Relative Navigation System** T.G. McGee; P.E. Rosendall; A. Hill; W. Shyong; T.B. Criss; C. Reed; G. Chavers; M. Hannan; C. Epp; M. Nishant
2:00 PM-5:30 PM, Sun Ballroom 4, **GNC-18. Control and Diagnostics of Air Vehicles and UAVs**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Co-Chair: Andreas Knoblach, DLR - German Aerospace Center; Chair: Raghu Venkataraman, University of Minnesota	
2:00-2:30 PM	**Maximizing the Efficiency of a UAV on Perimeter Patrol** K. Kalyanam; M. Pachter; P.R. Chandler
2:30-3:00 PM	**Necessary Conditions for Control Effort Minimization of Euler-Lagrange Systems** A. L'Afflitto; W. Haddad
3:00-3:30 PM	**Disturbance Observer-Based Control to Suppress Air Resonance for the EC135 ACT/FHS Research Helicopter** S. Greiser
3:30-4:00 PM	**Model-Based Detection and Isolation of Rudder Faults for a Small UAS** R. Venkataraman; P.J. Seiler
4:00-4:30 PM	**Worst Case Analysis of a Saturated Gust Loads Alleviation System** A. Knoblach; H. Pfifer; P.J. Seiler
4:30-5:00 PM	**Aircraft Inertial Measurement Unit Fault Identification with Application to Real Flight Data** P. Lu; E. Van Kampen
2:00 PM-5:30 PM, Sun Ballroom 6, **GNC-19. Missile Autopilot and Integrated Control**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Chair: Scott Kowalchuk, Sandia National Laboratories; Co-Chair: Ryan Ratliff, Boeing Defense, Space & Security	
2:00-2:30 PM	**Missile Autopilot Design During Boost Phase Using Robust Backstepping Approach** S. Lee; Y. Kim; G. Moon; B. Jun
2:30-3:00 PM	**Missile Guidance Law Considering Constraints on Impact Angle and Terminal Angle of Attack** H. Kim; H. Kim
3:00-3:30 PM	**Considerations on Boost Phase Modeling and Guidance Command Generation** R. Tekin; K.S. Erer
3:30-4:00 PM	**Lyapunov Based Nonlinear Impact Angle Guidance Law for Stationary Targets** U.H. ATES
4:00-4:30 PM	**Autopilot Design for Aerial Vehicles with Aerodynamic Surfaces and Lateral Jets Using Explicit Hybrid MPC** B. Yang; Y. Zhao; Y. Yao
2:00 PM-5:00 PM, Sun Ballroom 5, **GNC-20. Spacecraft Guidance, Navigation, and Control I**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Chair: Felix Mora-Camino, ENAC; Co-Chair: Steve Ulrich, Carleton University	

2:00-2:30 PM	**SEXTANT - Station Explorer for X-ray Timing and Navigation Technology** J.W. Mitchell; M. Hassouneh; L. Winternitz; J. Valdez; S. Price; S.R. Semper; W.H. Yu; Z. Arzoumanian; P. Ray; K.S. Wood; R.J. Litchford; K.C. Gendreau
2:30-3:00 PM	**A Comparison of Thruster Implementation Strategies for a Deep Space Nanosatellite** M. Nehrenz; M. Sorgenfrei
3:00-3:30 PM	**Assessing Nanosatellite Cluster Launch Scenarios** C. Wen; P. Gurfil
3:30-4:00 PM	**On the development of a 6DoF GNC framework for docking multiple small satellites** M.A. Nunes
4:00-4:30 PM	**Preliminary Design and Prototyping of a Low-Cost Spacecraft Attitude Determination and Control Setup** K. Turkoglu; A. Gong
4:30-5:00 PM	**Attitude Control of Upper Stage with Gimbaled Thruster during Orbit Transfer** Z. Wang
2:00 PM-5:30 PM, Emerald 1, **GTE-04. Engine Systems II,** Technical Paper, **53rd AIAA Aerospace Sciences Meeting,** Chair: Knox Millsaps, Naval Postgraduate School; Co-Chair: Ali Gordon, University of Central Florida	
2:00-2:30 PM	**Unsteady Particle Dynamics within an Inertial Particle Separator** P.H. Snyder; E. Loth; D.L. Barone
2:30-3:00 PM	**A Novel Approach to Life Prediction Analysis of a Turbine Engine Blade to Disk Attachment** S. Naboulsi
3:00-3:30 PM	**Turbine Engine Performance Estimation Using Particle Filters** B. Yang; P. Sengupta; P.K. Menon
3:30-4:00 PM	**Comparison of Thermal Barrier Coating Stresses via High Energy X-Rays and Piezospectroscopy** A.C. Manero; K. Knipe; C. Meid; J. Wischek; C. Lacdao; M. Smith; J. Okasinski; J. Almer; M. Bartsch; A. Karlsson; S. Raghavan
4:00-4:30 PM	**Three-Dimensional Numerical Modeling of Tip Leakage Flow over a Finite Blade** O.U. Khan; M.J. Khan
2:00 PM-5:30 PM, Emerald 3, **HSABP-05. Pressure Gain Combustion - Rotating Detonation Engines II,** Technical Paper, **53rd AIAA Aerospace Sciences Meeting,** Chair: Venkat Tangirala, General Electric; Co-Chair: Steven Stanley, Aerojet Rocketdyne	
2:00-2:30 PM	**Numerical Investigation of Centerbodiless RDE Design Variations** W. Stoddard; E.J. Gutmark
2:30-3:00 PM	**Experimental and Numerical Evaluation of Pressure Gain Combustion in a Rotating Detonation Engine** B.A. Rankin; M. Fotia; D.E. Paxson; J. Hoke; F. Schauer

3:00-3:30 PM	**Visualization of Rotating Detonation Waves in a Plane Combustor with a Cylindrical Wall Injector** S. Nakagami; K. Matsuoka; J. Kasahara; A. Matsuo; I. Funaki
3:30-4:00 PM	**Numerical Investigation of Inlet Injection in a Rotating Detonation Engine** R.B. Driscoll; V. Anand; A.C. St. George; W. Stoddard; D.E. Munday; E.J. Gutmark
4:00-4:30 PM	**Numerical Study of Heat Transfer in a Rotating Detonation Combustor** S. Randall; V. Anand; A.C. St. George; E.J. Gutmark
4:30-5:00 PM	**Method of Characteristics Analysis of the Internal Flowfield in a Rotating Detonation Engine** R.T. Fievisohn; K.H. Yu
2:00 PM-5:30 PM, Emerald 8, **HSABP-06. High Speed Air-Breathing Combustors I**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Claudio Bruno, United Technologies Research Center; Co-Chair: Joaquin Castro, Pratt & Whitney-Rocketdyne	
2:00-2:30 PM	**Effects of Inlet Distortion on Cavity Ignition in Supersonic Flow** T. Ombrello; S. Peltier; C.D. Carter
2:30-3:00 PM	**Response of a Mach 3 Cavity Flameholder to a Shock-Induced Distortion** S. Peltier; C.D. Carter
3:00-3:30 PM	**Numerical Investigation of Upstream Fuel Injection through Porous Media for Scramjet Engines via Surrogate-Assisted Evolutionary Algorithms** H. Ogawa; B. Capra; P. Lorain
3:30-4:00 PM	**Preliminary analysis of strategies for NOx reduction** A. Ingenito; A. Agresta; R. Andriani; F. Gamma
2:00 PM-5:30 PM, Osceola Ballroom 1, **IS-06. Realizing the Potential for Genetic Fuzzy Systems**, Technical Paper, **AIAA Infotech @ Aerospace**, Chair: Kelly Cohen, University of Cincinnati; Co-Chair: Nicholas Ernest, University of Cincinnati	
2:00-2:30 PM	**Genetic Algorithm Based LQR for Attitude Control of a Magnetically Actuated CubeSat** S. Kukreti; A. Walker; P. Putman; K. Cohen
2:30-3:00 PM	**Genetic Fuzzy Approach for Control and Task Planning Applications** A. Sathyan; N.D. Ernest; K. Cohen
3:00-3:30 PM	**Multi-agent Cooperative Decision Making using Genetic Cascading Fuzzy Systems** N.D. Ernest; E. Garcia; D. Casbeer; K. Cohen; C.J. Schumacher
3:30-4:00 PM	**Enhanced Approaches to Solving the Multiple Traveling Salesman Problem** N. Boone; A. Sathyan; K. Cohen
4:00-4:30 PM	**Genetic Optimization of Fuzzy Logic Control for Coupled Dynamic Systems** A. Janson; N.O. Stockton; K. Cohen

2:00 PM-5:30 PM, Sarasota 1, **MAT-07. Fatigue & Fracture I**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: David Powell; Co-Chair: Ray Fertig, University of Wyoming	
2:00-2:30 PM	**Regression Study to Standardize Piezoelectric Axial Fatigue Testing** O.E. Scott-Emuakpor; T. George; C.M. Holycross; J.A. Beck; C.J. Cross
2:30-3:00 PM	**Interlaminar and Intralaminar Dynamic Fracture Behaviors of CFRP: An Investigation Using Digital Image Correlation and High-Speed Photography** R. Bedsole; H. Tippur
3:00-3:30 PM	**Oblique plies for steering through-thickness delamination migration in fibre reinforced polymers** R. Luterbacher; R.S. Trask; I. Bond
3:30-4:00 PM	**Fatigue Life of Selective Laser Melted and Hot Isostatically Pressed Ti-6Al-4v Absent of Surface Machining** K. Rekedal; D. Liu
4:00-4:30 PM	**Fatigue Behavior and Modeling for Thermoplastics** R. Meyer; J. Simsiriwong; M. Lugo; N. Shamsaei
2:00 PM-5:30 PM, Sarasota 3, **MDO-05. MDO: Fundamental Algorithms & Processes II**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Andy Ko, Phoenix Integration, Inc.; Co-Chair: Jason Hicken, Rensselaer Polytechnic Institute	
2:00-2:30 PM	**Application of Reduced Order Techniques for Sensitivity Analysis to Multidisciplinary Aerospace Systems** J. Parrish; M. Rais-Rohani; J.M. Janus
2:30-3:00 PM	**Standard Particle Swarm Optimization on Source Seeking Using Mobile Robots** R. Zou; V.K. Kalivarapu; S. Bhattacharya; E.H. Winer; J. Oliver
3:00-3:30 PM	**Sequential Radial Basis Function Optimization Strategy Using Support Vector Machine for Flight Vehicle Multidisciplinary Design Optimization** R. Shi; L. Liu; T. Long; X. Guo; L. Peng
3:30-4:00 PM	**Sensitivity Analysis Methods for Mitigating Uncertainty in Engineering System Design** Q.C. Curran; K.E. Willcox
4:00-4:30 PM	**Simultaneous aircraft allocation and mission optimization using a modular adjoint approach** J. Hwang; S. Roy; J. Kao; J. Martins; W.A. Crossley
4:30-5:00 PM	**Effectiveness Indicators for Stopping Criteria based on Minimum Required Improvement** A. Chaudhuri; R.T. Haftka
2:00 PM-5:30 PM, Sun Ballroom 1, **MST-07. Model Design and Development**, Technical Paper, **AIAA Modeling and Simulation Technologies Conference**, Chair: Richard Ruff, Technical University Munich	

2:00-2:30 PM	**Development of an Aerodynamic Model for a Delta-Wing Equivalent Model II (EQ-II) Aircraft** W. Okolo; A. Dogan; W.B. Blake
2:30-3:00 PM	**Updating a finite element based structural model of a small flexible aircraft** A. Gupta; C.P. Moreno; H. Pfifer; B. Taylor; G.J. Balas
3:00-3:30 PM	**Systemic modeling and design approach for morphing wing aileron controller using Matlab/Simulink** V. Jean-Baptiste; R. Botez
3:30-4:00 PM	**Flight Dynamics Modeling of a Body Freedom Flutter Vehicle for Multidisciplinary Analyses** M. Leitner; A. Knoblach; T.M. Kier; C.P. Moreno; A. Kotikalpudi; H. Pfifer; G.J. Balas
4:00-4:30 PM	**A Coupled Lateral/Directional Flight Dynamics and Structural Model for Flight Control Design** O. Juhasz; M. Tischler; S.G. Hagerott; D. Staples; J. Fuentealba
2:00 PM-5:30 PM, Sun Ballroom 2, **MST-08. Multi-Domain Modeling and Simulation**, Technical Paper, **AIAA Modeling and Simulation Technologies Conference**, Chair: Alaa Elmiligui, NASA Langley Research Center	
2:00-2:30 PM	**Development of a Reduced Order Model to Study Rotor/Ship Aerodynamic Interaction** N. Rajmohan; J. Zhao; C. He; S. Polsky
2:30-3:00 PM	**Modeling Systems-of-Systems from Multiple Design Perspectives: Agents, Interfaces, and Architectures** D.N. Fry; R. Campbell; D.A. DeLaurentis
3:00-3:30 PM	**Coupling between non-local particle and finite element methods** E. Lin; H. Chen; Y. Liu
2:00 PM-5:30 PM, Naples 3, **MVC-04. Meshing Techniques, Including Surface and Volume Grids, and Moving/Deforming Meshes**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: James Masters, Aerospace Testing Alliance (ATA)	
2:00-2:30 PM	**A Survey of Overset Domain Assembly Methods** C.T. Druyor; S.L. Karman; W. Jones
2:30-3:00 PM	**Advances in Parallelization For Large Scale Oct-Tree Mesh Generation** M. O'Connell; S.L. Karman
3:00-3:30 PM	**An Overset Grid 2D/Infinite Swept Wing URANS Solver Using Recursive Cartesian Bucket Method** A.T. Levesque; A. Pigeon; E. Laurendeau
3:30-4:00 PM	**Mesh Manipulation for 3D Tetrahedral Meshes** J.S. Masters
4:00-4:30 PM	**Adaptive curvature control grid generation algorithms for complex glaze ice shapes RANS simulations** K. Hasanzadeh Lashkajani; E. Laurendeau; I. Paraschivoiu
4:30-5:00 PM	**Alignment and orthogonality in anisotropic metric-based mesh adaptation** A. Loseille; D.L. Marcum; F. Alauzet

2:00 PM-5:30 PM, Osceola Ballroom 5, **NDA-04. Optimization under Uncertainty,** Technical Paper, **17th AIAA Non-Deterministic Approaches Conference,** Chair: Masoud Rais-Rohani, Mississippi State University; Co-Chair: Eric Tuegel, USAF	
2:00-2:30 PM	**Investigating Uncertainty in Capability versus Cost Decision-Making** E.E. Forster; P.S. Beran; R.M. Kolonay; H. Bae
2:30-3:00 PM	**Multi-fidelity Robust Aerodynamic Design Optimization Under Mixed Uncertainty** H.R. Shah; S. Hosder; L.T. Leifsson; S. Koziel; Y. Tesfahunegn
3:00-3:30 PM	**Robust Aeroelastic Design of a Composite Wing-Box** C. Scarth; P. Sartor; J.E. Cooper; P. Weaver; G. Silva
3:30-4:00 PM	**Robust aerodynamic optimization of morphing airfoils for helicopter rotor blades** F. Fusi; G. Quaranta; A. Guardone; P.M. Congedo
4:00-4:30 PM	**Robust Optimization of a Wing Under Structural and Material Uncertainties** K. Boopathy; M.P. Rumpfkeil; R.M. Kolonay
4:30-5:00 PM	**Active Subspaces Applied to Range Safety Analysis and Optimization** F.M. Capristan; J.J. Alonso
2:00 PM-4:00 PM, Osceola Ballroom B, **PANEL-04. Big Data Analytics in Aerospace,** Panel, **Forum 360**	
2:00 PM-5:30 PM, Emerald 5, **PC-11. Heterogeneous Combustion and Propellants,** Technical Paper, **53rd AIAA Aerospace Sciences Meeting,** Co-Chair: Thomas Jackson, University of Florida Gainesville; Co-Chair: Jeffrey Murphy, The Aerospace Corporation	
2:00-2:30 PM	**Thermogravimetric Analysis of the Decomposition of a Paraffin Particle/HTPB Fuel Grain for Hybrid Rocket Motors** K.P. Cardoso; M.Y. Nagamachi; E.Y. Kawachi; T.B. de Araújo; R.F. Nunes
2:30-3:00 PM	**Combustion of Bio-derived Fuels With Additives and Research on the Losses of Unburned Fuel in Hybrid Propellant Rocket Engines** V.I. Naoumov; P. Skomin; P. Deptula
3:00-3:30 PM	**3D Printer for Paraffin Based Hybrid Rocket Fuel Grains** M. Creech; A. Crandell; N. Eisenhauer ; S. Marx; T. Busari; A. Link; T.L. Pourpoint
3:30-4:00 PM	**Experimental characterization of combustion regimes for micron-sized aluminum powders** R. Lomba; F. Halter; C. Chauveau; S. Bernard; P. Gillard; C. Mounaim-Rousselle; T. Tahtouh; O. Guezet
4:00-4:30 PM	**Combustion characteristic of solid propellants used H2O** T. Sasaki; K. Takahashi; T. Kuwahara
4:30-5:00 PM	**Fabrication and Thermophysical Properties of Nickel-coated Aluminum Powder by Electroless Plating** S. Lee; W. Yoon; K. Noh; J. Lim; D. Lee; C. Kim

2:00 PM-5:30 PM, Emerald 7, **PC-12. Turbulent Combustion IV**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: Epaminondas Mastorakos, University of Cambridge; Co-Chair: Venkatramanan Raman, University of Texas at Austin	
2:00-2:30 PM	**Characteristics of Freely Propagating Premixed Flame Kernels in Supersonic Turbulent Channel Flows** B.A. Ochs; D. Scarborough; S. Menon; N.R. Grady; R.W. Pitz
2:30-3:00 PM	**Experimental Study on the Interaction between Swirl-stabilized Nozzles for Isothermal Flowfields** B.J. Dolan; R. Villalva Gomez; H. Nawroth; S.D. Pack; E.J. Gutmark
3:00-3:30 PM	**Flame Extinction Dynamics of Lean Premixed Bluff-Body Stabilized Flames** M.K. Geikie; K. Ahmed
3:30-4:00 PM	**Study on Flame Response Characteristics under Transverse Pressure Excitations** S. Seo; Y. Park
2:00 PM-5:30 PM, Emerald 2, **PDL-03. Diagnostics and Experimental Techniques**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Azer Yalin, Colorado State University	
2:00-2:30 PM	**Characterization of Dissociation and Gas Heating in Femtosecond Laser Plasma with Planar Rayleigh Scattering and Rayleigh Scattering Polarimetry** C. Limbach; R.B. Miles
2:30-3:00 PM	**Methods for Enhancing Radar REMPI Sensitivity** S. McGuire; A. Dogariu; T. Chng; R.B. Miles
3:00-3:30 PM	**Measurements of OH and H number density distributions in a near-surface discharge at the liquid water / water vapor interface** V. Petrishchev; Z. Yin; C. Winters; W.R. Lempert; I.V. Adamovich
3:30-4:00 PM	**Electric Field Measurements in a Dielectric Barrier Nanosecond Pulse Discharge with Sub-nanosecond Time Resolution** B.M. Goldberg; S. O'Byrne; W.R. Lempert
4:00-4:30 PM	**Towards a Cavity Enhanced Thomson Scattering Electron Diagnostic for Low Temperature Plasmas** A. Friss; A.P. Yalin
4:30-5:00 PM	**Capillary nanosecond discharges as a tool for the measurement of quenching coefficients at high specific energy deposition** A. Klochko; A. Salmon; J. Lemainque; N. Popov; S. Starikovskaia
2:00 PM-5:30 PM, Miami 3, **SATS-01. Small Satellites - Technologies I**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Andrew Santangelo; Co-Chair: Jeremy Straub, University of North Dakota	
2:00-2:30 PM	**Micro-Cathode Arc Thruster for Small Satellite Propulsion** M. Keidar
2:30-3:00 PM	**Attitude Control System of a Cube Satellite with Small Solar Sail** Y. Yoo; S. Koo; G. Kim; S. Kim; J. Suk; J. Kim

3:00-3:30 PM	**A Practical Attitude Control System using Control Moment Gyros for Nano-Satellite TSUBAME** T. Hao; S. Matunaga
3:30-4:00 PM	**Crew Waste Water Electrical Propulsion System With Developed Arcjet Thruster** H. Tahara; Y. Nogawa
4:00-4:30 PM	**Modular Rapidly Manufactured Small Satellite (MRMSS)** G.T. Trinh; K. Cheung
2:00 PM-5:30 PM, Osceola Ballroom 4, **SCS-04. Composite Material for Spacecraft Structures**, Technical Paper, **2nd AIAA Spacecraft Structures Conference**, Chair: Matthew Santer, Imperial College London; Co-Chair: Samuel Bradford, Jet Propulsion Laboratory	
2:00-2:30 PM	**High Strain Composites** T.W. Murphey; W. Francis; B. Davis; J.M. Mejia-Ariza
2:30-3:00 PM	**High Strain Composite Slit Tubes for Large Roll-Out Structures** W. Francis; B. Davis; M. Hulse; P. Keller; D. Campbell; G. Freebury
3:00-3:30 PM	**Dual-Matrix Composite Wideband Antenna Structures for CubeSats** M. Sakovsky; I. Maqueda Jimenez; C. Karl; S. Pellegrino; J. Costantine
3:30-4:00 PM	**Preliminary Design of Deployable Flexible Shell Reflector of an X-band Satellite Payload** O. Soykasap; S. Karakaya; A. Gayretli; Y. Akcin
4:00-4:30 PM	**The Strain Energy Deployed High Expansion Outer Barrel Assembly** M.J. Silver; P. Warren
4:30-5:00 PM	**Simulation of Non-Synchronous Deployment of the Large Deployable Hoop Truss Antenna** L. Liu; J. Shan; C. Tao
5:00-5:30 PM	**Hysteresis modeling and control system design for shape memory alloy actuators** I. Kim; J. Shan
2:00 PM-5:30 PM, Tampa 2, **SD-08. Special Session: Transformative Technologies for High-Speed/High-Efficiency Next-Gen Rotorcraft I**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Anubhav Datta, Science & Technology Corporation; Co-Chair: Edward Smith, Pennsylvania State University	
2:00-2:30 PM	**NASA Technology for Next Generation Vertical Lift Vehicles** S.A. Gorton; I. Lopez; C. Theodore
2:30-3:00 PM	**Wind Tunnel Testing of an Instrumented Rotor at High Advance Ratio** B. Berry; I. Chopra
3:00-3:30 PM	**Aeromechanics of Slowed Rotors at High Advance Ratios** G.M. Bowen-Davies; I. Chopra
3:30-4:00 PM	**Leading- and Trailing-Edge Reversal of a Cambered Airfoil for Stopped Rotors** R.j. Niemiec; G. Jacobellis; F. Gandhi

4:00-4:30 PM	**Multi-Plate Dry Clutch Design and Analysis for Dual Speed Rotorcraft Applications** H. Desmidt; E.C. Smith; R.C. Bill; S. Rao
4:30-5:00 PM	**Analysis of Pericyclic Mechanical Transmission with Straight Bevel Gears** T.D. Mathur; Z.B. Saribay; R.C. Bill; E.C. Smith; H. Desmidt
5:00-5:30 PM	**Blast Attenuating Aircraft Structure** D.K. McCarthy; L.M. Chiu; M.E. Robeson
2:00 PM-5:30 PM, Sun Ballroom D, **STR-09. Special Session: Impact Damage in Composites** , Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Ali Najafi, ANSYS, Inc.; Co-Chair: Mostafa Rassaian, Boeing Engineering Operations & Technology	
2:00-2:30 PM	**Face-on and Edge-on Impact Response of Composite Laminates** W. Ji; S.P. Sringeri; S.I. Thorsson; C.J. Kosztowny; A.M. Waas; M. Rassaian; S.L. Liguore
2:30-3:00 PM	**Low-Velocity Impact Damage and Delamination Crack Arrestment with Translaminar Reinforcements** V. Ranatunga; S.B. Clay
3:00-3:30 PM	**Prediction of Low-velocity Impact Damage in Sandwich Composite Beams** J. Xie; S.I. Thorsson; J. Marek; A.M. Waas
3:30-4:00 PM	**An effective modeling strategy for drop test analysis of composite curved beam** D. Pham
4:00-4:30 PM	**Lagrange-based Modeling and Testing of Composite Structure Impact Dynamics** A. Baeten
4:30-5:00 PM	**Comparison of Delamination Threshold Load Prediction of Composite Panels with Different Thickness** S. Gao; Z. YU; H. Wang
2:00 PM-5:30 PM, Tampa 1, **STR-10. Advanced Structures**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: John Zipay, NASA-Johnson Space Center; Co-Chair: Peter Gustafson, Western Michigan University	
2:00-2:30 PM	**Morphing structures: non-linear composite shells with irregular planforms** E. Lamacchia; E. Eckstein; A. Pirrera; P. Weaver
2:30-3:00 PM	**Damage Detection Threshold of Optically-Digitized Gas-Turbine Engine Hardware** J.N. Wertz; C.M. Baudendistel; E.B. Henry; J. Brown
3:00-3:30 PM	**Investigation the Finite Element Model and Impact Characteristics of Civil Aircraft** Y. Ren; J. Xiang; Z. Luo; J. Zheng
3:30-4:00 PM	**Isogeometric Weak Coupling of Shell Structures** Y. Guo; M. Ruess
4:00-4:30 PM	**Structural Characterization of Advanced Composite Tow-Steered Shells with Large Cutouts** K. Wu; J.D. Turpin; N.W. Gardner; B. Stanford; R.A. Martin

2:00 PM-5:30 PM, Tallahassee 3, **STR-11. Failure Analysis and Prediction II**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Stanley Smeltzer, NASA Langely Research Center; Co-Chair: Pappu Murthy, NASA Glenn Research Center	
2:00-2:30 PM	**Modeling cure induced damage in Fiber Reinforced Composites** R.J. D'Mello; M. Maiaru; A.M. Waas; P. Prabhakar
2:30-3:00 PM	**The effect of free edges on inter-laminar performance of curved laminates** T. Kim; T. Fletcher; T.J. Dodwell; R. Butler; R. Scheichl; J. Ankersen; R. Newley
3:00-3:30 PM	**A novel two-scale progressive failure analysis method for laminated fiber-reinforced composites** D. Zhang; D.K. Patel; A.M. Waas
3:30-4:00 PM	**Fatigue Crack Initiation Analysis of Roller Bearing Using Multiscale modeling** M. Ghaffari; S. Xiao
4:00-4:30 PM	**Damage Development 3D-RUC of Polymer Matrix with Randomly Distributed Fibers** N.K. Parambil; S. Gururaja
4:30-5:00 PM	**Statistical Strength Determination of Carbon Fibres Using a Generalized Weibull Model** H. Rajendran; P. Mohite; C. Upadhyay
5:00-5:30 PM	**Simulation of Distributed Co-Crack Propagation in Cellular Automata by Time Warp Synchronization** Y. Park; D.N. Mavris
2:00 PM-5:30 PM, Tampa 3, **SUR-01. Air and Space Survivability**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Julian Rimoli, Georgia Institute of Technology; Co-Chair: Svetlana Poroseva, The University of New Mexico	
2:00-2:30 PM	**Advanced Vertical Lift Aircraft Demonstrator: Design for Certification of a Hover Lift-Drive System** J.P. Silva-Martinez; W. Lee; A. Boshinski
2:30-3:00 PM	**Development of Methods for Characterization of Hydrodynamic Ram Cavity Dynamics** A.J. Lingenfelter; D. Liu
3:00-3:30 PM	**Topology Optimization of an Aircraft Wing** D. Walker; D. Liu
3:30-4:00 PM	**Characterization of Spin Effects on Warhead Fragment Flyout Distance** J. Trombetta; M.L. Bennett; J. Hand; S. Carpenter; D. Liu
2:00 PM-5:30 PM, Sun Ballroom B, **TP-05. Nonequilibrium Flows and Radiation II**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Michael Winter, University of Kentucky; Co-Chair: David Hash, NASA Ames Research Center	
2:00-2:30 PM	**Modeling of Non-equilibrium Plasmas in an Inductively Coupled Plasma Facility** W. Zhang; A. Lani; M. Panesi
2:30-3:00 PM	**Nonequilibrium Plasma Flow Computation with Atomic and Molecular State Transitions** Y. Ogino; K. Totani; N. Ohnishi

3:00-3:30 PM	**Radiative Gasdynamics of Re-entry Space Vehicle of Large Size with Superorbital Velocity** S. Surzhikov
3:30-4:00 PM	**Measurements of Surface Accommodation Coefficients for Rarefied Aerodynamics** T. Ozawa; T. Suzuki; K. Fujita
4:00-4:30 PM	**Sensitivity Analysis of Non-equilibrium Martian Entry Flow to Chemical and Thermal Modelling** A. Preci; M. Auweter-Kurtz
4:30-5:00 PM	**'Uncertainty Quantification Study of Non-Equilibrium Viscous Shock-Layer'** T. Kino; K. Totani; T. Ishihara; Y. Ogino; N. Ohnishi
5:00-5:30 PM	**Bluntness Effects on Hypersonic Leading Edge Separation** A. Khraibut; S. Gai; A.J. Neely
2:00 PM-5:30 PM, Osceola Ballroom 2, **UMS-03. UAS Sensor Technologies** , Technical Paper, **AIAA Infotech @ Aerospace**, Chair: Richard Stansbury, Embry-Riddle Aeronautical University	
2:00-2:30 PM	**From Radiosonde To Papersonde: The Use of Conductive Inkjet Printing in the Massive Atmospheric Volume Instrumentation System (MAVIS) Project** P.H. King; J. Scanlan; A. Sobester
2:30-3:00 PM	**Obstacle Avoidance System for UAVs using Computer Vision** S. Bhandari; B. Richards; M. Gan; J. Dayton; M. Enriquez; J. Liu; J. Quintana
3:00-3:30 PM	**SDAC-UAS: A Sensor Data Acquisition Unmanned Aerial System for Flight State Monitoring and Aerodynamic Data Collection** O.D. Dantsker; A.V. Louis; R. Mancuso; M. Caccamo; M.S. Selig
3:30-4:00 PM	**Validation and Calibration of a High Resolution Sensor in Unmanned Aerial Vehicles for Producing Images in the IR Range Utilizable in Precision Agriculture** P.L. Jimenez Soler; D. Agudelo
4:00-4:30 PM	**Autonomous Wall-Following Based Navigation of Unmanned Aerial Vehicles in Indoor Environments** A. Nemati; M. Sarim; M. Hashemi; M. Kumar
4:30-5:00 PM	**A Ground Control Station for Multivehicular Control and Data Visualization** S. Bhandari; M. Heid; A. Bettadapura; E. Ito; D. Tang
2:00 PM-5:30 PM, Emerald 6, **WE-07. Wind Energy Aerodynamics and Aeroacoustics III**, Technical Paper, **33rd Wind Energy Symposium**, Chair: Edward White, Texas A&M University; Co-Chair: Raymond Chow, University of California Davis	
2:00-2:30 PM	**Flow Field Around a Serrated Trailing Edge at Incidence** C. Arce; D. Ragni; S. Pröbsting; F. Scarano
2:30-3:00 PM	**ECN-G1-21 Airfoil: Design and Wind Tunnel Testing** F. Grasso
3:00-3:30 PM	**Aerodynamic Drag and Aeroacoustic Noise Mitigation of Flatback Airfoil with Spanwise Wavy Trailing Edge** S. Yang; J.D. Baeder

3:30-4:00 PM	**Study of distributed roughness effect over wind turbine airfoils performance using CFD** B. Mendez; X. Munduate
4:00-4:30 PM	**Aerodynamic Response of a Wind Turbine Airfoil to Gurney Flap Deployment** P. Nikoueeyan; J.A. Strike; A.S. Magstadt; M. Hind; J.W. Naughton
4:30-5:00 PM	**New airfoil family design for large wind turbine blades** M. Canal Vila; D. Miguel Alfaro
2:00 PM-5:30 PM, Emerald 4, **WE-08. Wind Energy Materials, Mechanics, and Sensing**, Technical Paper, **33rd Wind Energy Symposium**, Chair: David Miller, Mechanical and Industrial Engineering	
2:00-2:30 PM	**Fatigue Resistance of Wind Blade Laminates Containing In-Plane Waviness Flaws** D. Samborsky; D.A. Miller; D.S. Cairns; J.F. Mandell; A.J. Lolatte
2:30-3:00 PM	**Development and Assessment of Advanced Inspection Methods for Wind Turbine Blades Using a Focused WINDIE Experiment** D. Roach; S. Neidigk; T. Rice; R. Duvall; J.A. Paquette
3:00-3:30 PM	**Assessment of the Effect of Hybrid GRFP-CFRP Usage in Wind Turbine Blades on the Reduction of Fatigue Damage Equivalent Loads in the Wind Turbine System** O.M. Gözcü; T. Farsadi; C. Tola; A. Kayran
3:30-4:00 PM	**Development and Commissioning of a Small / Mid-Size Wind Turbine Test Facility** D.N. Valyou; T.J. Arsenault; K. Janoyan; P. Marzocca; N. Post; C. Grappasonni; M. Arras; G. Coppotelli; D. Cardenas; H. Elizalde; O. Probst
4:00-4:30 PM	**A Robust Algorithm to Detecting Wind Turbine Blade Health Using Vibro-Acoustic Modulation and Sideband Spectral Analysis** N.J. Myrent; D.E. Adams; G. Rodriguez-Rivera; D.A. Ulybyshev; J. Vitek; E. Blanton; T. Kalibera
4:30-5:00 PM	**Evaluating the Aerodynamic Performance of Small Horizontal Axis Wind Turbines** B.D. Wallace; D.K. McLaughlin; S.W. Stewart
5:30 PM-6:30 PM, Osceola Ballroom CD, **LEC-04. Dryden Lectureship in Research Aeroacoustics**, Lecture, **Forum**	
6:30 PM-8:00 PM, Exhibit Hall B/C, **NW-01. Reception in the Exhibit Hall**, Networking, **Forum**	

Wednesday, January 07, 2015

Time	Session or Event Info

8:00 AM-9:00 AM, Osceola Ballroom CD, **PLNRY-03. The Future of Design**, Plenary, **Forum**	
9:30 AM-12:30 PM, Miami 2, **AA-07. Jet Noise Prediction II**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Philip Morris, Pennsylvania State University	
9:30-10:00 AM	**The Prediction of Scattered Broadband Shock-Associated Noise** S.A. Miller
10:00-10:30 AM	**Linear Analysis of Jet-Engine Core Noise Based upon High-Fidelity Combustor and Turbine Simulations** J.D. O'Brien; J. Kim; M. Ihme
10:30-11:00 AM	**Empirical Source Strength Correlations for RANS-Based Acoustic Analogy Methods** M.T. Kube-McDowell; G.A. Blaisdell; A.S. Lyrintzis
11:00-11:30 AM	**Towards a Low-Cost Wavepacket Model of the Jet Noise Source** D. Papamoschou; J. Xiong; F. Liu
11:30-12:00 PM	**Assessing Prediction and Reduction Technique of Lift-off Acoustics Using Epsilon Flight Data** S. Tsutsumi; T. Ishii; K. Ui; S. Tokudome; K. Wada
9:30 AM-12:30 PM, Tallahassee 2, **ACD-02. High Speed Aircraft Design**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Steve Komadina, Northrop Grumman Aerospace Systems	
9:30-10:00 AM	**The Design, Analysis and Performance Evaluation of Waverider Configurations for Hypersonic Vehicle Applications** F. Ferguson; N. Dasque; M. Dhanasar
10:00-10:30 AM	**On the Conceptual Design of Waverider Forebody Geometries** K. Kontogiannis; A. Sobester; N.J. Taylor
10:30-11:00 AM	**A Design Space Exploration Methodology to Support Decisions under Evolving Requirements' Uncertainty and its Application to Suborbital Vehicles** C. Frank; O.J. Pinon-Fischer; D.N. Mavris
11:00-11:30 AM	**Design Optimization of Deformable Wing Configurations of the Single-stage-to-orbit Aerospace Plane** Y. Liao; X. Tong; Y. Ding
11:30-12:00 PM	**TU Delft Advanced Transonic Trainer, Winner AIAA Undergraduate Individual Design Competition** S. van Schie
12:00-12:30 PM	**TU Delft SMART, Winner AIAA Graduate Team Aircraft Design Competition** R. Klein
9:30 AM-12:30 PM, Naples 3, **ACD-03. Aircraft Design Tools**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Andrew Hahn, NASA-Langley Research Center	
9:30-10:00 AM	**Closing the Loop on Aircraft Conceptual Sizing using the Merlin Flight Simulator** A. Altman

10:00-10:30 AM	**Artificial Neural Networks Applied to Airplane Design** N.R. Secco; B.S. Mattos
10:30-11:00 AM	**Interactive Reconstruction of 3D Models in the OpenVSP Parametric Geometry Tool** R.A. McDonald
11:00-11:30 AM	**Multi-section Wing Capability for the Vehicle Sketch Pad Structural Analysis Module** A.J. Chaput
11:30-12:00 PM	**Parametric Identification of Surface Regions in OpenVSP for Improved Engineering Analysis** A.M. Gary; R.A. McDonald
12:00-12:30 PM	**Demonstration of new Capabilities of OpenVSP v3.0.0** R.A. McDonald
9:30 AM-12:30 PM, Captiva 2, **AFM-09. Launch Vehicle, Missile, and Projectile Flight Mechanics I**, Technical Paper, **AIAA Atmospheric Flight Mechanics Conference**, Chair: Philippe Wernert, French-German Research Institute of Saint-Louis (ISL)	
9:30-10:00 AM	**Integration of Grid Fins for the Optimal Design of Missile Systems** T.W. Ledlow; J.E. Burkhalter; R.J. Hartfield
10:00-10:30 AM	**An Improved Method to Calculate the Nonlinear Rolling Moment Due to Differential Fin Deflection of Canard Controlled Missiles** F.G. Moore; L. Moore; G. McGowan
10:30-11:00 AM	**Robust Stability Evaluation of the Space Launch System Control Design: A Singular Value Approach** J. Pei; J. Newsom
11:00-11:30 AM	**Euler–Lagrange Optimal Control for Symmetric Projectiles** B.T. Burchett; A.L. Nash
11:30-12:00 PM	**Elliptical Trajectory Guidance Law with Terminal Impact Angle Constraint** T. Zhang; H. SHE
9:30 AM-12:30 PM, Sun Ballroom B, **AFM-10. Air Launch to Orbit (Invited)**, Panel, **AIAA Atmospheric Flight Mechanics Conference (non-paper sessions)**, Chair: John Del Frate, NASA Dryden Flight Research Center; Co-Chair: Peggy Williams-Hayes, NASA Armstrong Flight Research Center	
9:30 AM-12:30 PM, Tallahassee 1, **AMT-03. Novel Diagnostics in Reacting Flows**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: Bin Ma, GE Global Research Center; Co-Chair: Craig Johansen, University of Calgary	
9:30-10:00 AM	**Experimental Characterization of Decay Rates in Bluff-Body Stabilized Flames Using Sodium Injection** J. Monfort; A.W. Caswell; V. Belovich; B. Huelskamp
10:00-10:30 AM	**Experimental study of transverse jet mapping using PLIF** L.Z. Thompson; G. Natsui; C. Velez; J.S. Kapat; S. Vasu

10:30-11:00 AM	**Multi-Beam, High-Repetition-Rate Thermometry in a Gas Turbine Combustor Test Rig using Time-Division-Multiplexed Tunable Diode Lasers** A.W. Caswell; K.D. Rein; S. Roy; S. Stouffer; A. Lynch; E. Corporan; J.R. Gord
11:00-11:30 AM	**Quantitative Temperature Imaging in Turbulent Non-Premixed Flames Using Filtered Rayleigh Scattering** T.A. McManus; J.A. Sutton
9:30 AM-12:30 PM, Naples 2, **APA-20. Propeller/Rotorcraft/Wind Turbine Aerodynamics I**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Kursat Kara, Khalifa University of Science, Technology & Research; Co-Chair: Chunhua Sheng, University of Toledo	
9:30-10:00 AM	**Analysis of propeller-airframe interaction effects through a combined numerical simulation and wind-tunnel testing approach** A. Gomariz-Sancha; M. Maina; A.J. Peace
10:00-10:30 AM	**Computational Simulation of Pusher-Tractor Propeller Configurations for Unmanned Air Vehicles** U. Kaynak
10:30-11:00 AM	**Testing and Evaluation of Passively Actuated Vanes Operating near Propeller Tip** W. . Loh; J.D. Jacob
11:00-11:30 AM	**Experimental Feasibility Assessment of Counter-Rotating Propellers for Stratospheric Airships** P. Liu; Z. Tang; Y. Chen; H. Guo
11:30-12:00 PM	**Effect of Duct-Rotor Aerodynamic Interactions on Blade Design for Hover and Axial Flight** B.G. Jimenez; R. Singh
9:30 AM-12:30 PM, Destin 2, **APA-21. Airfoil/Wing/Configuration Aerodynamics II**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Andrew McComas, TLG Aerospace; Co-Chair: John Latz, Northrop Grumman Aerospace Systems	
9:30-10:00 AM	**Demonstration of a Conceptual Design Tool for Multiple Lifting Elements** W. Bissonnette; G. Bramesfeld
10:00-10:30 AM	**Numerical Study of Intermittent Laminar Bubble Bursting and Vortex Shedding on an NACA 64_3-618 Airfoil** A. Jost; J. Zhang
10:30-11:00 AM	**3D stall-cells investigation on a NACA64418** D. Ragni; C. Simao Ferreira
11:00-11:30 AM	**Airfoil Designs for a Small and Large Horizontal Axis Wind Turbine** D.R. Hall
11:30-12:00 PM	**Simulation of a MW rotor equipped with vortex generators using CFD and an actuator shape model** N. Troldborg; N.N. Sørensen; F. Zahle; P. Réthoré

9:30 AM-12:30 PM, Naples 1, **APA-22. Flow Control Applications & Demonstrations (Active & Passive) I**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Bohdan Cybyk, The Johns Hopkins University Applied Physics Laboratory; Co-Chair: Jacob George, Metrolaser Inc.	
9:30-10:00 AM	**Plasma Flow Control on a Landing Gear Model** M.C. Wicks; F.O. Thomas; T.C. Corke; C. Nelson; M.P. Patel; A.B. Cain
10:00-10:30 AM	**Analysis of the Near-Field of an Asymmetrically Controlled Supersonic Round Jet** D.R. Gonzalez; D.V. Gaitonde; M.J. Lewis
10:30-11:00 AM	**Dynamic Stall Alleviation for an SC1095 Airfoil using Synthetic Jets** S.A. Tran; A. Fisher; D.A. Corson; O. Sahni
11:00-11:30 AM	**Effect of Vertical Strakes on Suppression of Wing Rock in Slender Delta Wing** S.R. Bakaul; Y. Wang; W. Guangxing
9:30 AM-12:30 PM, Destin 1, **APA-23. Special Session: CREATE-AV High Performance Computing Multiphysics Applications of Full-up Air Vehicles III**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Nathan Hariharan, CREATE-AV; Co-Chair: Rohit Jain, AFDD, US Army	
9:30-10:00 AM	**Applications of CREATE-AV KestrelTM v5 with Cartesian Adaptive Mesh Refinement** T. Shafer; T.A. Eymann; J.R. Forsythe; B. Hallissy; D. Hine
10:00-10:30 AM	**Dual Mesh CFD Solver Comparison of Low Mach Flow over the ROBIN Fuselage** J. Abras; N.S. Hariharan
10:30-11:00 AM	**Dynamic Modeling of an Aircraft Primary Thrusting Nozzle** J.S. Masters
11:00-11:30 AM	**A-10 Analysis Using HPCMP CREATETM-AV Kestrel Product Utilizing the Firebolt Propulsion Component** J. Klepper; R.H. Nichols; J. Jenkins
9:30 AM-12:30 PM, Miami 3, **APA-24. Special Session: Low Boom Activities I**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Linda Bangert, NASA Langley Research Center; Co-Chair: Kenrick Waithe, Gulfstream Aerospace Corporation	
9:30-10:00 AM	**Computational and Experimental Study of Supersonic Nozzle Flow and Shock Interactions** M.B. Carter; A.A. Elmiligui; S. Nayani; R.S. Castner; W.E. Bruce; J. Inskeep
10:00-10:30 AM	**Airframe-Nozzle-Plume Interactions in the Context of Low Sonic Boom Design** M. Wintzer; R.S. Castner
10:30-11:00 AM	**Plume and Shock Interaction Effects on Sonic Boom in the 1-foot by 1-foot Supersonic Wind Tunnel** R.S. Castner; S.E. Cliff; A.A. Elmiligui; C. Winski
11:00-11:30 AM	**Aerodynamic Shape Optimization of a Two-Stream Supersonic Plug Nozzle** C. Heath; E.J. Nielsen; M.A. Park; J.S. Gray

11:30-12:00 PM	**Acoustically Induced Shock Oscillations of a Low-Boom Inlet** S. Candon; E. Loth
9:30 AM-12:30 PM, Osceola Ballroom 6, **AS-04. Compliant Structures**, Technical Paper, **23nd AIAA/AHS Adaptive Structures Conference**, Chair: Wenbin Yu, Purdue University; Co-Chair: Ruxandra Botez	
9:30-10:00 AM	**Design and Testing of a Compliant Mechanism-based Demonstrator for a Droop-Nose Morphing Device** S. Vasista; J. Riemenschneider; H.P. Monner
10:00-10:30 AM	**Variable Camber Compliant Wing - Design** J.J. Joo; C.R. Marks; L. Zientarski; A.J. Culler
10:30-11:00 AM	**Variable Camber Compliant Wing - Wind Tunnel Testing** C.R. Marks; L. Zientarski; A.J. Culler; B. Hagen; B.M. Smyers; J.J. Joo
11:00-11:30 AM	**Implementation of a Contact Model in a Topology Optimization Method for the Design of Compliant Mechanisms for Thermal Control** P.F. Thurier; G.A. Lesieutre; M. Frecker; J. Adair
11:30-12:00 PM	**Chiral Morphing Wing Tip Design and Test** C. Wales; R. Cheung; J.E. Cooper
12:00-12:30 PM	**Active Camber Morphing Wings Based on Compliant Structures: an Aeroelastic Assessment** A. De Gaspari; S. Ricci; L. Travaglini; L. Cavagna; A. Antunes; F. Odaguil; G. Lima
9:30 AM-12:30 PM, Sun Ballroom A, **FD-28. Current Challenges for Computational Fluid Dynamics, Industry and Government Interests I (Invited)**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: HT Huynh, NASA Glenn Research Center; Co-Chair: Norbert Kroll, DLR - German Aerospace Center	
9:30-10:00 AM	**Challenges for the Application of CFD in a Production Aircraft Design Environment (Invited)** J.C. Vassberg
10:00-10:30 AM	**Current Challenges for Industrial Application of LES Turbulence Models (Invited)** R.H. Bush
10:30-11:00 AM	**Challenges to the use of CFD in the Military Aircraft Industry (Invited)** B.R. Smith
11:00-11:30 AM	**Current Challenges for CFD (Invited)** B.J. Glaz
11:30-12:00 PM	**Towards an end to end integrated high order flow simulation system (Invited)** W.N. Dawes; Y. LU
12:00-12:30 PM	**CFD, past, present, and future (Invited)** A. Jameson
9:30 AM-12:30 PM, Sanibel 3, **FD-29. Flow Control (Fundamentals and Technology) II**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: David Williams, Illinois Institute of Technology; Co-Chair: Jeffrey Bons, Ohio State University	

9:30-10:00 AM	**Control of a Model Secondary Flow Targeting Convective Instabilities** S.I. Benton; J.P. Bons
10:00-10:30 AM	**Comparison of a Separated Flow Response to Localized and Global-type Disturbances** B. Monnier; D.R. Williams; T. Weier; T. Albrecht
10:30-11:00 AM	**Spatial Growth of the Spanwise Disturbance Induced by a Synthetic Jet on Separation Control over an Airfoil** Y. Abe; T. Nonomura; K. Fujii
11:00-11:30 AM	**Model Reduction and Analysis of Deep Dynamic Stall on a Plunging Airfoil using Dynamic Mode Decomposition** A.T. Mohan; M.R. Visbal; D.V. Gaitonde
11:30-12:00 PM	**Control of Three-Dimensional Cavity Flow Using Leading-Edge Slot Blowing** B. George; L.S. Ukeiley; L.N. Cattafesta; K. Taira
12:00-12:30 PM	**Concept of Fluid Motion Scale Control and Its Realization** N.F. Yurchenko
9:30 AM-12:30 PM, Daytona 1, **FD-30. Hypersonic Flows**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: Eric Stephen, Vanderbilt University; Chair: Rodney Bowersox, Texas A&M University	
9:30-10:00 AM	**Gas flow in a generic inlet with blunted leading edges** V. Radchenko; V. Borovoy; V. Mosharov; A. Skuratov; I. Struminskaya
10:00-10:30 AM	**Large-Eddy Simulation of a Three-Dimensional Hypersonic Shock Wave Turbulent Boundary Layer Interaction of a Single-Fin** J. Fang; Y. Yao; A. Zheltovodov; L. Lu
10:30-11:00 AM	**Three dimensional vortex modes of hypersonic steady-state flow on the blunted bodies leading age** S.M. Drozdov
11:00-11:30 AM	**Preliminary LES of Hypersonic Shock/Turbulent Boundary Layer Interactions** C.M. Helm; M.P. Martin
9:30 AM-12:30 PM, Sun Ballroom 6, **FD-31. Unsteady Flow I**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Raymond Gordnier, Air Force Reseach Laboratory; Co-Chair: Zifeng Yang, Wright State University	
9:30-10:00 AM	**Streamwise oscillation of airfoils into reverse flow** K.O. Granlund; M.V. Ol; A.R. Jones
10:00-10:30 AM	**Streamwise-oriented vortex interactions with a NACA0012 wing** D.J. Garmann; M.R. Visbal
10:30-11:00 AM	**Implicit LES Computation of a Vortical-Gust/Wing Interaction for Transitional Flow** R.E. Gordnier; M.R. Visbal
11:00-11:30 AM	**Investigation of Incompressible Dynamic Stall Physics by Application of a Parametric Proper Orthogonal Decomposition** D. Coleman; F.O. Thomas; S. Gordeyev; K.C. Heintz; T.C. Corke

11:30-12:00 PM	**Unsteady Aerodynamic Response Modeling: A Parameter-Varying Approach** M. Hemati; S. Dawson; C.W. Rowley
9:30 AM-12:30 PM, Miami 1, **GNC-21. Advances in UAS Technologies I**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Co-Chair: Soon-Jo Chung, University of Illinois at Urbana-Champaign; Chair: John Valasek, Texas A&M University	
9:30-10:00 AM	**Position Control for Free-Designed Generic Multi Rotor Vehicle Systems with Augmented L1 Adaptive Control** Z. Wang; F. Holzapfel
10:00-10:30 AM	**Source Localization For A Turbulent Plume Model Using Bayesian Occupancy Grid Mapping** H. Abdelghaffar; C.A. Woolsey
10:30-11:00 AM	**High Velocity Path Control of Quadrotors** J. Wang; T. Raffler; F. Holzapfel
11:00-11:30 AM	**Synthesis and flight test of an automatic landing controller using Quantitative Feedback Theory** T.D. Woodbury; J. Valasek
11:30-12:00 PM	**Disturbance Rejection with Distributed Acceleration and Strain Sensing** G.M. Gremillion; L. Castano; J. Humbert
9:30 AM-12:30 PM, Sun Ballroom 3, **GNC-22. Trajectory Planning and Optimization I**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Chair: Amanda Lampton, Systems Technology, Inc.; Co-Chair: Francois-David Hugon, Gulfstream Aerospace Corporation	
9:30-10:00 AM	**Dynamic Programming Trajectory Optimization by Piecewise Linear Approximation** A. Harada; H. Matsuda; Y. Miyazawa
10:00-10:30 AM	**Rapid Mission Planning for Aircraft Thermal Management** D.B. Doman
10:30-11:00 AM	**Mobile Target Tracking Using an Unmanned Aerial Vehicle with a Non-Gimbaled Video Sensor** L. Sun; D. Pack
11:00-11:30 AM	**Multiresolution Aircraft Guidance in a Spatiotemporally-varying Threat Field** R.V. Cowlagi
11:30-12:00 PM	**Optimal Cruise Altitude for Aircraft Thermal Management** D.B. Doman
12:00-12:30 PM	**Vulnerability of UAV Sense and Avoid to Exploitations: Non-Cooperative Trajectory Modifications** P. Pierpaoli; R. Zanforlin; A.R. Rahmani
9:30 AM-12:30 PM, Sun Ballroom 4, **GNC-23. Optimization Based Methods for Estimation and Control of Flight Vehicles** , Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Chair: Zinan Zhao, Fraunhofer Institute for Ceramic Technologies and Systems, Branch Materials Diagnostics IKTS-MD; Co-Chair: Anil Rao, University of Florida	

9:30-10:00 AM	**Estimated Time of Arrival Prediction based on State-Dependent Transition Hybrid Estimation Algorithm** J. Wei; J. Lee; I. Hwang
10:00-10:30 AM	**Modeling and Simulation of a Fish-like Swimmer in an Ideal Flow with Lateral-line Flow Sensors** Y. Xu; K. Mohseni
10:30-11:00 AM	**Fault Detection and Isolation for Air Data Sensors Using Real-Time Moving Horizon Estimation** Y. Wan; T. Keviczky
11:00-11:30 AM	**A Split-Bernstein/MCMC Approach to Probabilistically Constrained Optimization** Z. Zhao; M. Kumar
11:30-12:00 PM	**Utilizing the Algorithmic Differentiation Package ADiGator for Solving Optimal Control Problems Using Direct Collocation** M.J. Weinstein; M.A. Patterson; A.V. Rao
12:00-12:30 PM	**Impulsive Spacecraft Formation Maneuvers with Optimal Firing Times** L.A. Sobiesiak; C.J. Damaren
9:30 AM-12:30 PM, Sun Ballroom 5, **GNC-24. Spacecraft Guidance, Navigation, and Control II**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Co-Chair: Kevin Bollino, AFOSR/EOARD	
9:30-10:00 AM	**Flywheel Parameters and Configuration Skew Angle Distribution for Variable Speed Control Moment Gyro** F. Liu
10:00-10:30 AM	**Fault-Tolerant Attitude Control Systems using Multi-Objective Optimization for a Spacecraft Equipped with Control Moment Gyros** A. Noumi; M. Takahashi; T. Kanzawa; M. Haruki
10:30-11:00 AM	**An Improved Optimal Steering Law for SGCMG and Adaptive Attitude Control of Flexible Spacecraft** L. Wang; Y. Guo; L. Wu; Q. Chen
11:00-11:30 AM	**Generalized Dynamics of A Spacecraft with Plural MEDs and Attitude Control with DGVSCMGs via LPV Control Theory** T. Sasaki; T. Shimomura
11:30-12:00 PM	**An Integrated Steering Law Considering Biased Loads and Singularity for Control Moment Gyroscopes** Y. Nanamori; M. Takahashi
12:00-12:30 PM	**Singularity Analysis of Control Moment Gyros on Gyroelastic Body** Q. Hu; Z. Wang; J. Zhang; Y. Jia; M. Liu; Z. Zhou
9:30 AM-12:30 PM, Sanibel 1, **GT-03. ETW Test on Separated Wing Flow within the EU FP7 ESWIRP Project (Invited)**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Jürgen Quest, ETW GmbH; Co-Chair: Roman Paryz,	
9:30-10:00 AM	**ETW scientific Access in ESWIRP** T. Lutz; J. Quest; J.L. Godard
10:00-10:30 AM	**Comparison of the NASA Common Research Model European Transonic Wind Tunnel Test Data to NASA Test Data (Invited)** M.B. Rivers; R. Rudnik; J. Quest

10:30-11:00 AM	**Time-resolved Prediction and Measurement of the Wake past the CRM at high Reynolds number stall conditions** T. Lutz
11:00-11:30 AM	**High-Speed PIV Applied to Wake of NASA CRM Model in ETW Under High Re-Number Stall Conditions for Sub- and Transonic Speeds** R. Konrath
11:30-12:00 PM	**Unsteady Wake Flow Analysis of an Aircraft under low-speed Stall Conditions using DES and PIV** A. Waldmann
12:00-12:30 PM	**Dynamic Measurements on the NASA CRM Model tested in ETW** H. Quix; A. Hensch
9:30 AM-12:30 PM, Emerald 1, **GTE-05. Gas Turbine Combustion II**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Subith Vasu, University of Central Florida	
9:30-10:00 AM	**The Effect of Fluid Mechanics on the Temperature Evolution of Spark Kernels** S. Okhovat; D.L. Blunck
10:00-10:30 AM	**High-Speed Imaging of Combustion Oscillations in a Multiple Nozzle Staged Combustor** B.J. Dolan; R. Villalva Gomez; G. Zink; S.D. Pack; E.J. Gutmark
10:30-11:00 AM	**Ignition of Hydrogen–Air and Methane-Air Mixtures by PS DBD Plasma at Elevated Pressures** A. Starikovskiy
9:30 AM-12:30 PM, Emerald 3, **HSABP-07. Pressure Gain Combustion - Rotating Detonation Engines III**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Daniel Paxson, NASA Glenn Research Center; Co-Chair: Frank Lu, University of Texas at Arlington	
9:30-10:00 AM	**Comparison of Numerically Simulated and Experimentally Measured Performance of a Rotating Detonation Engin** D.E. Paxson; M. Fotia; J. Hoke; F. Schauer
10:00-10:30 AM	**Comparison of Transient Response of Pressure Measurement Techniques with Application to Detonation Waves** C.A. Stevens; M. Fotia; J. Hoke; F. Schauer
10:30-11:00 AM	**Statistical Treatment of Wave Instability in Rotating Detonation Combustors** V. Anand; A.C. St. George; R.B. Driscoll; E.J. Gutmark
11:00-11:30 AM	**Experimental Investigation of a Rotating Detonation Engine Injector Temporal Response** A. Naples; J. Hoke; F. Schauer
11:30-12:00 PM	**Experimental Analogue of a Pre-Mixed Rotating Detonation Engine In Plane Flow** I.Q. Andrus; P. King; M. Fotia; F. Schauer; J. Hoke
9:30 AM-12:30 PM, Emerald 8, **HSABP-08. High Speed Air-Breathing Combustors II**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Faure Malo-Molina, Air Force Reseach Laboratory; Co-Chair: Ronald Springer, The Johns Hopkins University Applied Physics Laboratory	

9:30-10:00 AM	**Thrust Augmentation Optimisation through Supersonic After-Burning in Scramjet Engine Nozzles via Surrogate-Assisted Evolutionary Algorithms** M.J. Candon; H. Ogawa; G. Dorrington
10:00-10:30 AM	**Analysis of High Temperature Deposition as Flow Control in a Supersonic Combustor** F.J. Malo-Molina
10:30-11:00 AM	**Design Modifications of a Supersonic Wind Tunnel for High Speed Mixing Research of a Novel Injector in a Scramjet Combustor** L.A. Smith; S. Farokhi
11:00-11:30 AM	**Numerical investigation of high-pressure combustion in rocket engines using Flamelet/Progress-variable models** A. Coclite; L. Cutrone; G. Pascazio; P. De Palma
9:30 AM-12:30 PM, Osceola Ballroom 3, **IS-07. Intelligent Interactions between Humans and Machines** , Technical Paper, **AIAA Infotech @ Aerospace**, Chair: Matthew Gombolay, MIT; Co-Chair: Julie Shah, MIT - Massachusetts Institute of Technology	
9:30-10:00 AM	**Toward the Development of a Low-Altitude Air Traffic Control Paradigm for Networks of Small, Autonomous Unmanned Aerial Vehicles** A.R. Hutchins; M. Cummings; M.C. Aubert; S.C. Uzumcu
10:00-10:30 AM	**Flight Envelope Information-Augmented Display for Enhanced Pilot Situational Awareness** K. Ackerman; E. Xargay; D.A. Talleur; R.S. Carbonari; A. Kirlik; N. Hovakimyan; I.M. Gregory; C.M. Belcastro; A. Trujillo; B.D. Seefeldt
10:30-11:00 AM	**Trajectory Prediction and Alerting for Aircraft Mode and Energy State Awareness** K.H. Shish; J. Kaneshige; D.M. Acosta; S. Schuet; T. Lombaerts; L. Martin; A.N. Madavan
11:00-11:30 AM	**Verifying Correctness of Information in Flight-Deck User Interface using Hybrid System Observability** B. Yang; P.K. Menon; I. Hwang
9:30 AM-12:30 PM, Osceola Ballroom 2, **IS-08. Model-Based Systems and Software Engineering for Complex Aerospace Systems**, Technical Paper, **AIAA Infotech @ Aerospace**, Chair: Michel Ingham, Jet Propulsion Laboratory	
9:30-10:00 AM	**Ontology and Modeling Patterns for State-Based Behavior Representation** J. Castet; M.L. Rozek; M.D. Ingham; N.F. Rouquette; S.H. Chung; J. Jenkins; D.A. Wagner; D.L. Dvorak
10:00-10:30 AM	**The Engineering Modeling System: A Model-Based Engineering Environment for Integrated Systems Engineering** C.L. Delp; D. Lam; C. Lee; B. Clement; S. Wong
10:30-11:00 AM	**Connecting Requirements to Architecture and Analysis via Model-Based Systems Engineering** B. Cole; J. Jenkins
11:00-11:30 AM	**Intelligent Planning Systems for Space Resiliency** P. Zetocha; R.M. Sivilli; D.M. Surka

9:30 AM-12:30 PM, Sarasota 1, **MAT-08. Constitutive Modeling & Metallics**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Co-Chair: Vikas Tomar, Purdue University; Chair: Michael Sangid, Purdue University	
9:30-10:00 AM	**Modeling Rate Dependent Response of Shape Memory Alloys Using a Thermo-Mechanical Continuum Phase Field Approach** B.O. Agboola; D.C. Lagoudas
10:00-10:30 AM	**Fractal Patterns in Mechanics of Materials** S. Kale; S. Koric; M. Ostoja-Starzewski; A. Saharan
10:30-11:00 AM	**The effective elastic and fracture properties of particulate reinforced composites using a new non-local particle method** H. Chen; Y. Liu
11:00-11:30 AM	**Numerical Modeling of Ice Behavior at High Strain Rates** S. Balunna; T. Sain
11:30-12:00 PM	**Experimental Investigation and Modelling of Laser Machining of Sapphire for High Temperature Pressure Transducers** J. Collins; W.S. Oates; M. Sheplak; D. Blood
9:30 AM-12:30 PM, Sarasota 2, **MAT-09. Materials Testing & Characterization I**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Rajiv Naik, Pratt & Whitney; Co-Chair: Donald Jaworske, NASA Glenn Research Center	
9:30-10:00 AM	**Wave Amplification in Double Negative Elastic Metamaterials** Y. Su; C. Sun
10:00-10:30 AM	**A Versatile In-Situ Ablation Recession and Thermal Sensor Adaptable for Different Types of Ablatives** J.H. Koo; M.H. Natali; B.H. Lisco; E.R. Yao; O.A. Ezekoye
10:30-11:00 AM	**Damage Mapping of Composites with Piezospectroscopic Coatings** G. Freihofer; S. Raghavan
11:00-11:30 AM	**Particle Size Effect on Load Transfer in Single Particle Composite Samples via X-Ray Diffraction** E. Durnberg; K. Knipe; G. Freihofer; I. Hanhan; R. Feng; S. Raghavan
11:30-12:00 PM	**Improved Aircraft Tire Life through Laboratory Tire Wear Testing and Computational Modeling** A.J. Zakrajsek; S. Naboulsi; M.H. Bohun; M.G. Vogel; B.J. Fiepke; R.N. Vogel; R.M. Bena; S.J. Howell; C.B. Alsobrook; J.M. Childress
12:00-12:30 PM	**Environmental Effects on Long Term Displacement Data of Woven Fabric Webbings Under Constant Load for Inflatable Structures** W.S. Kenner

9:30 AM-12:30 PM, Sarasota 3, **MDO-06. MDO: AeroStructure Design I**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Joaquim Martins, University of Michigan; Co-Chair: Vladimir Balabanov, Boeing Commercial Airplanes	
9:30-10:00 AM	**Aeroelastic Tailoring of Transport Wings Including Transonic Flutter Constraints** B. Stanford; C.D. Wieseman; C. Jutte
10:00-10:30 AM	**Level-Set Topology Optimization with Aeroelastic Constraints** P.D. Dunning; B. Stanford; H.A. Kim
10:30-11:00 AM	**Aerostructural Design Optimization of an Adaptive Morphing Trailing Edge Wing** D.A. Burdette; G.K. Kenway; Z. Lyu; J. Martins
11:00-11:30 AM	**Time-dependent Aero-elastic Adjoint-based Aerodynamic Shape Optimization of Helicopter Rotors in Forward Flight** A. Mishra; K. Mani; D.J. Mavriplis; J. Sitaraman
11:30-12:00 PM	**Robust Design of Aeroelastically Tailored Composite Plates Using a New Formulation of Anti-Optimization and Optimization** S.L. Phelan; D.N. Mavris
12:00-12:30 PM	**High-Fidelity Aerostructural Optimization with Integrated Geometry Parameterization and Mesh Movement** Z.J. Zhang; S. Khosravi; D.W. Zingg
9:30 AM-12:30 PM, Sun Ballroom 1, **MST-09. Modeling of Vehicle Dynamics I**, Technical Paper, **AIAA Modeling and Simulation Technologies Conference**, Chair: David Gingras, Bihrle Applied Research Inc.	
9:30-10:00 AM	**Modeling of aircraft with time-varying inertia properties** J. Han; G. Hong
10:00-10:30 AM	**Symmetric dual solutions and nongreat-circle effect of out-of-plane equilibrium formation** Y. Shi; C. Han
10:30-11:00 AM	**Rapid State Space Modeling Tool for Rectangular Wing Aeroservoelastic Studies** P.M. Suh; H.j. Conyers; D.N. Mavris
11:00-11:30 AM	**Dynamic Modeling, Simulation and Safe Boundary Evaluation of Catapult launch for Carrier-based airplane** C. Jing; H. Zheng-Chun
11:30-12:00 PM	**An Integrated Modeling, Simulation and Analysis Environment for Coupled Aircraft Subsystems to Facilitate Control Synthesis and Validation** M. Yasar; H.G. Kwatny; G. Bajpai
12:00-12:30 PM	**Modeling, Analysis and Validation of a Small Airplane Flight Dynamics** A. Kamal; A.M. Aly; A. Elshabka
9:30 AM-12:30 PM, Sun Ballroom 2, **MST-10. Motion Systems, Visual Systems, Image Generation**, Technical Paper, **AIAA Modeling and Simulation Technologies Conference**, Chair: Frank Cardullo, State University of NY	

9:30-10:00 AM	**Automatic Optimization of Motion Drive Algorithms using OMCT** K. De Ridder; M. Roza
10:00-10:30 AM	**Evolutionary System Identification of Flight Motion Simulators** T.L. Vu; R. Thamm
10:30-11:00 AM	**State of the Art Flight Motion Simulator Controller** T.L. Vu; R. Thamm
11:00-11:30 AM	**Aircraft Upset and Recovery Simulation with the DLR Robot Motion Simulator** Y. Nie; T. Bellmann; A. Labusch; G. Looye; E. Van Kampen; Q. Chu
9:30 AM-12:30 PM, Osceola Ballroom 5, **NDA-05. Random Fatigue, Fracture and Life Prediction**, Technical Paper, **17th AIAA Non-Deterministic Approaches Conference**, Chair: Thiagarajan Krishnamurthy, NASA-Langley Research Center; Co-Chair: Ben Thacker, Southwest Research Institue	
9:30-10:00 AM	**Methods of Determining Equivalent Initial Flaw Size (EIFS) Distributions Containing Suspended Data** L. Domyancic
10:00-10:30 AM	**A Fleet Risk Prediction Methodology for Mistuned IBRs using Geometric Mistuning Models** E.B. Henry; J.M. Brown; J.C. Slater
10:30-11:00 AM	**Probabilistic fatigue life prediction of composite laminates using Bayesian updating** T. Peng; Y. Liu
11:00-11:30 AM	**Free vibration analysis of angle-ply composite plates with uncertain properties** S. Adhikari
9:30 AM-11:30 AM, Osceola Ballroom B, **PANEL-05. Advanced Manufacturing and its Impact on the Design Process of the Future**, Panel, **Forum 360**	
9:30 AM-12:30 PM, Emerald 5, **PC-13. Advanced Combustion Concepts III**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Lance Smith, United Technologies Research Center	
9:30-10:00 AM	**Enhanced Homogeneous Catalysis in a Monopropellant Microthruster** M.R. McDevitt; D.L. Hitt
10:00-10:30 AM	**Optical Measurements of Density and Species Concentration in a Low Reynolds Number Micro-Nozzle Flow** D.A. Rosenberg; B.A. Williams; S.G. Tuttle; M.F. Osborn; L.T. Williams
10:30-11:00 AM	**Numerical Modeling of Fuel Pyrolysis and Oxidation in a Laminar Micro-flow Tube Reactor** M.J. Rahimi; R.F. Johnson; H.K. Chelliah
11:00-11:30 AM	**Experimental Investigation on The Ignition limits of Plasma-assisted Ignition in Propane-Air Mixture** Y. Jinlu; H. Liming; D. Wei
11:30-12:00 PM	**Impact of Phase transitions on the Flow Structure of Gaseous Jets Injected into Water** x.y. zhang; Y. Tang; J. Tang; S. Li; N. Wang

12:00-12:30 PM	**An Evaluation of a PCM-based power plant for Micro Aerial Vehicles (MAV)** A. Lidor; D. Weihs; E. Sher
9:30 AM-12:30 PM, Emerald 7, **PC-14. Combustion Diagnostics**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Christopher Cadou, University of Maryland	
9:30-10:00 AM	**A Method for Eliminating Beam Steering Error for the Modulated Absorption-Emission Thermometry Technique** E.B. Coy
10:00-10:30 AM	**Study of Swirl Stabilized Burner with Interchangeable Swirler Using Chirped-Probe-Pulse Femtosecond Coherent Anti-Stokes Raman Scattering for Thermometry and CH4 Concentration Measurements** C.N. Dennis; D.L. Cruise; H.C. Mongia; G.B. King; R.P. Lucht
10:30-11:00 AM	**Characterization of Unsteady Combustion Phenomena in a University Scale Rocket Combustor** A. Dasari; M. Gamba
11:00-11:30 AM	**Methane Absorbance Measurements at Pressure/Temperature Conditions Associated With Hypersonic Flight** D. Maqbool; C.P. Cadou
11:30-12:00 PM	**Quantitative Experimental and Model-based Imaging of Mid-Infrared Radiation from a Turbulent Luminous Flame** R.K. Kapaku; B.A. Rankin; M.E. Mueller; H. Lalit; J.P. Gore
12:00-12:30 PM	**Shock Tube/Laser Absorption Measurements of Jet Fuel Pyrolysis and Oxidation** Y. Zhu; R.K. Hanson; D.F. Davidson
9:30 AM-12:30 PM, Emerald 2, **PDL-13. Plasma & Laser Technology**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: James Drakes, Aerojet; Co-Chair: Robert Walter	
9:30-10:00 AM	**Kinetics of NO Formation and Decay in Nanosecond Pulse Discharges in Air-Fuel Mixtures** D. Burnette; I. Shkurenkov; I.V. Adamovich; W.R. Lempert
10:00-10:30 AM	**Laser Pointing for Orbital Debris Mitigation Using Higher Order Sliding Mode Control and Observation Techniques** A. Palosz; Y.B. Shtessel; R. Fork
9:30 AM-12:30 PM, Osceola Ballroom 4, **SCS-06. Analysis of Lightweight Spacecraft Structures**, Technical Paper, **2nd AIAA Spacecraft Structures Conference**, Chair: Joseph Footdale, Load Path, LLC; Co-Chair: Thomas Murphey, Air Force Reseach Laboratory	
9:30-10:00 AM	**Stability of Skin Added Lattice Structure** S. Yoshino; T. Aoki; T. Yokozeki; K. Terashima; T. Kamita
10:00-10:30 AM	**Assessment of Existing Models for Honeycomb Homogenized Properties** H.E. Soliman; R.K. Kapania
10:30-11:00 AM	**Structural Design of with Multi-Mission Space Exploration Vehicle (MMSEV)/Human Airlock (HAL) Concept Mission** G.A. Hrinda

11:00-11:30 AM	**Analysis of Thermal-Mechanical Interactions of STEM Booms** J.R. Blandino
11:30-12:00 PM	**Deployment Dynamic Analysis of a Tetrahedral Truss Reflector** X. Wang; Y. Wang; H. Fang; P. Huang; Z. Chen
9:30 AM-12:30 PM, Tampa 3, **SD-09. Cable/Beam Modeling II**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Ramesh Malla, University of Connecticut ; Co-Chair: Chad Hebert, Sierra Nevada Corporation	
9:30-10:00 AM	**A Novel Scheme to Accurately Compute Higher Vibration Modes using the Ritz Method and a Two-point BVP Solver** P. Sudalagunta; C. Sultan; R.K. Kapania; L.T. Watson; P. Raj
10:00-10:30 AM	**Free Vibration Analysis of an Integrally Stiffened Plate with Plate-Strip Stiffeners using a Set of Static Timoshenko Beam Functions** N. Ahmad; R.K. Kapania
10:30-11:00 AM	**Improved Solution of Nonlinear Reduced-Order Models for Static and Dynamic Response Prediction** P.J. O'Hara; J.J. Hollkamp
11:00-11:30 AM	**Modeling and Dynamic Analysis of a Cable Towed Decoy** K. Liu; D. Li; J. Xiang; Y. Yan
11:30-12:00 PM	**On the Nonlinear Dynamics of Buckled Beams for Energy Harvesting** S. Emam
9:30 AM-12:30 PM, Sun Ballroom C, **SD-13/GEPC-05. Special Session: Subsonic Ultra Green Aircraft Research (SUGAR) Truss Braced Wing Aeroelasticity**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Robert Scott, NASA-Langley Research Center; Co-Chair: Christie Funk	
9:30-10:00 AM	**SUGAR Truss Braced Wing Full Scale Aeroelastic Analysis and Dynamically Scaled Wind Tunnel Model Development** T. Allen; B. Sexton; M.J. Scott
10:00-10:30 AM	**Aeroservoelastic Wind-Tunnel Test of the SUGAR Truss Braced Wing Wind-Tunnel Model** R.C. Scott; T. Allen; M. Castelluccio; B. Sexton; S. Claggett; J.R. Dykman; C. Funk; D. Coulson; R.E. Bartels
10:30-11:00 AM	**Nonlinear Aeroelastic Analysis of SUGAR Truss-braced Wing (TBW) Wind-tunnel Model (WTM) Under In-plane Loads** W. Zhao; R.K. Kapania; J.A. Schetz; J.M. Coggin
11:00-11:30 AM	**Aeroelastic Analysis of SUGAR Truss-Braced Wing Wind-Tunnel Model Using FUN3D and a Nonlinear Structural Model** R.E. Bartels; R.C. Scott; T. Allen; B. Sexton
11:30-12:00 PM	**Aeroelastic Analysis and Optimization of Flexible Wing Aircraft with a Novel Control Effector** W. Mallik; R.K. Kapania; J.A. Schetz

12:00-12:30 PM	**Low-Weight Low-Drag Truss-Braced Wing Design Using Variable Camber Continuous Trailing Edge Flaps** P. Chen; Z. Zhou; S.S. Ghoman; N.J. Falkiewicz
9:30 AM-12:30 PM, Daytona 2, **SRE-01. Lunar Resource Utilization**, Technical Paper, **8th Symposium on Space Resource Utilization**, Chair: Diane Linne, NASA Glenn Research Center	
9:30-10:00 AM	**Technologies and Techniques for Lunar Prospecting: Results from 2014 Field Testing Campaign** M.D. Cross
10:00-10:30 AM	**Impact of Drilling Operations on Lunar Volatiles Capture: Thermal Vacuum Tests** J.E. Kleinhenz; K. Zacny; J. Smith
10:30-11:00 AM	**Internal Combustion Engine Solar Independent Propulsion for the Exploration of Permanently Shaded Lunar Craters** W.J. Platts; C. Dyess
11:00-11:30 AM	**Thermite Reactions in the Mixtures of Magnesium with Lunar and Martian Regolith Simulants** A. Delgado; E. Shafirovich
11:30-12:00 PM	**Development of a Molten Regolith Electrolysis Reactor Model for Lunar In-Situ Resource Utilization".** S. Schreiner; L. Sibille; J. Dominguez; A. Sirk; J. Hoffman; G. Sanders
12:00-12:30 PM	**A Systematic Assessment of Asteroid Redirection Methods for Resource Exploration** M. Bazzocchi; M. Emami
9:30 AM-12:30 PM, Tampa 1, **STR-12. Special Session: Challenges in the Design of Joined Wings II**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Luciano Demasi, San Diego State University College of Engineering; Co-Chair: Anthony Palazotto, AFIT	
9:30-10:00 AM	**for Challenges in the Design of Joined Wings Special Session: Comparison of Aeroelastic Stability of Conventional and Joined-Wing Highly Flexible Aircraft** Z. Sotoudeh
10:00-10:30 AM	**For Challenges in the Design of Joined Wings Special Session: Joined-wing Aircraft in the Twenty-First Century and Beyond** Z. Sotoudeh
10:30-11:00 AM	**PrandtlPlane Joined Wing: Body Freedom Flutter, Limit Cycle Oscillation and Freeplay Studies** R. Cavallaro; L. Demasi; R. Bombardieri; A. Iannelli
11:00-11:30 AM	**Amphibious PrandtlPlane: Preliminary Design Aspects Including Propellers Integration and Ground Effect** R. Cavallaro; M. Nardini; L. Demasi; E. Santarpia
11:30-12:00 PM	**Design of an airfreight system based on an innovative PrandtlPlane aircraft** A. Frediani; F. Oliviero; E. Rizzo

12:00-12:30 PM	**Buckling Alleviation for Joined-Wing Aircraft** L.A. Lambert; J.E. Cooper; R.K. Nangia
9:30 AM-12:30 PM, Tallahassee 3, **STR-13. Special Sessions in Honor of Prof. Harry H. Hilton III**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Co-Chair: Michael Hyer, Fraunhofer Institute for Ceramic Technologies and Systems, Branch Materials Diagnostics IKTS-MD; Chair: Craig Merrett, Carleton University	
9:30-10:00 AM	**A Multi-Objective Nonlinear Piezoaeroelastic Wing Solution for Energy Harvesting and Load Alleviation: Modeling and Simulation** C. Bruni; G. Frulla; E. Cestino; P. Marzocca
10:00-10:30 AM	**Higher Order ZigZag Laminated Composite Shell Theory for Viscoelastic Behavior** N. Nguyen Sy; J. Lee; M. Cho
10:30-11:00 AM	**Statistical Characterization of Viscoelastic Modulus using a Spectrum Function Approach** R.W. Sullivan; J. Simsiriwong
11:00-11:30 AM	**Multiscale Modeling of Ceramic Matrix Composites** B.A. Bednarcyk; S.K. Mital; E.J. Pineda; S.M. Arnold
11:30-12:00 PM	**For Special Session in Honor of Harry H. Hilton** **Manipulating Natural Frequencies with Tunable Spring Masses** N. Hall; J. Hackel; J. Girard
9:30 AM-12:30 PM, Captiva 1, **TP-06. Heat Transfer II** , Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Diane Pytel, Lockheed Martin Space Systems; Co-Chair: Ab Hashemi, Lockheed Martin Space Systems	
9:30-10:00 AM	**Effect of Airflow on Heat Transfer of Air-to-Refrigerant Airfoil Heat Exchanger** Y. Ito; T. Goto; T. Nagasaki
10:00-10:30 AM	**A numerical study of thermal effects on vortex-induced vibration** H. Wan; S.S. Patnaik; B. Ervin
10:30-11:00 AM	**Time-Accurate CFD Conjugate Analysis of Transient Measurements of the Heat-Transfer Coefficient** S. Sathyanarayanan; S. Ramachandran; T. Shih
11:00-11:30 AM	**Development of a Full Scale Experimental and Simulation Tool for Environmental Control System Optimisation and Fault Detection** T. Childs; A.B. Jones; R. Chen
9:30 AM-12:30 PM, Osceola Ballroom 1, **UMS-04. UAS Airspace Integration: Policies and Guidelines**, Technical Paper, **AIAA Infotech @ Aerospace**, Chair: Douglas Marshall, New Mexico State Universtiy; Co-Chair: Stephen Cook, The MITRE Corporation	
9:30-10:00 AM	**An Alternative UAS Classification and Analysis Approach for Integration into the National Airspace System** R.S. Stansbury; K. Rigby; J. Clifford; D. Rudolph

10:00-10:30 AM	**Verification and Validation Considerations for UAS Test Sites to Facilitate Civil Certification of Remotely Piloted Aircraft** L.H. Mutuel
10:30-11:00 AM	**Learning and Predicting Pilot Behavior in Uncontrolled Airspace** C. Lowe; J.P. How
11:00-11:30 AM	**Improvements in UAV & their applications** A. Rashid
11:30-12:00 PM	**Dynamic Mobile Areas: opportunities for RPAS emergency management** A. Joulia; T. Dubot
12:00-12:30 PM	**Efficient Deployment of Multiple RPAS - Approaches towards Optimal Mission Planning Techniques** J. Zillies; D. Geister
9:30 AM-12:30 PM, Emerald 4, **WE-09. Offshore Wind Energy Systems,** Technical Paper, **33rd Wind Energy Symposium,** Chair: Jason Jonkman, National Renewable Energy Laboratory; Co-Chair: Fabian Wendt,	
9:30-10:00 AM	**Wake Influence on Dynamic Characteristics of Offshore Floating Wind Turbines** M. Jeon; S. Lee; S. Lee
10:00-10:30 AM	**Verification of New Floating Capabilities in FAST v8** F.F. Wendt; A. Robertson; J.M. Jonkman; G. Hayman
10:30-11:00 AM	**Verification of the new FAST v8 Capabilities for the Modeling of Fixed -Bottom Offshore Wind Turbines** B. Barahona; J.M. Jonkman; R. Damiani; A. Robertson; G. Hayman
11:00-11:30 AM	**Optimization and Design of a 105m Blade for a 10MW Hurricane-Resilient Wind Turbine** A.A. Raina; K.T. Lee; K. Wetzel
11:30-12:00 PM	**An Experimental Investigation on the Performance and the Wake Characteristics of a Wind Turbine Subjected to Surge Motion** H. Hu; M. Morteza Khosravi; P. Sarkar
12:00-12:30 PM	**Surface Ice Effects on the Extreme and Fatigue Loading of Bottom Fixed Offshore Wind Turbines** T.J. McCoy; A. Byrne
9:30 AM-12:30 PM, Emerald 6, **WE-10. Wind Turbine Loads, Control, and Dynamics,** Technical Paper, **33rd Wind Energy Symposium,** Chair: Susan Frost, NASA-Ames Research Center; Co-Chair: Peter Seiler, University of Minnesota	
9:30-10:00 AM	**Field Test Results from Lidar Measured Yaw Control for Improved Power Capture with the NREL Controls Advanced Research Turbine** A.K. Scholbrock; P.A. Fleming; A. Wright; C. Slinger; J. Medley; M. Harris
10:00-10:30 AM	**LPV Active Power Control and Robust Analysis for Wind Turbines** S. Wang; P.J. Seiler

10:30-11:00 AM	**Study on Controller Tuning of Wind Turbines with Backward Swept Blades** C. Pavese; C. Tibaldi; T. Kim
11:00-11:30 AM	**Adaptive Individual Blade Pitch Control for Large Wind Turbines with LiDAR Measurement of Wind Speed** K.S. Thapa Magar; M.J. Balas
11:30-12:00 PM	**Wind Turbine Envelope Riding** V. Petrovic; C.L. Bottasso
12:30 PM-2:00 PM, Exhibit Hall B/C, **LUNCH-03. Luncheon in the Exposition Hall**, Lunch, **Forum**	
2:00 PM-5:30 PM, Miami 2, **AA-08. Airframe Noise and Shielding**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Russell Thomas, NASA Langley Research Center	
2:00-2:30 PM	**Open Rotor Noise Shielding by Blended-Wing-Body Aircraft** Y. Guo; M. Czech; R.H. Thomas
2:30-3:00 PM	**System Noise Assessment of Blended-Wing-Body Aircraft with Open Rotor Propulsion** Y. Guo; R.H. Thomas
3:00-3:30 PM	**Noise Generation in Flow past a Full-Span Trailing-Edge Flap** W. Li; H. Liu
3:30-4:00 PM	**Computational Aeroacoustics Analysis for Noise Minimization on the G550 Nose Landing Gear** A.A. de Paula; R. Queiroz; J. Meneghini
2:00 PM-5:30 PM, Tallahassee 1, **AMT-04. Laser Based Aerodynamic Diagnostic Tools**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: Sean Kearney, Sandia National Laboratories; Co-Chair: Brian Thurow, Auburn University	
2:00-2:30 PM	**Pulse-Burst PIV in a High-Speed Wind Tunnel** S.J. Beresh; S.P. Kearney; J.L. Wagner; S. Roy; N. Jiang; M.N. Slipchenko; D.R. Guildenbecher; J. Henfling; R. Spillers; B.O. Pruett; J. Mance
2:30-3:00 PM	**Limitations on High-Spatial Resolution Measurements of Turbulence Using Femtosecond Laser Tagging** M.R. Edwards; C. Limbach; R.B. Miles; A. Tropina
3:00-3:30 PM	**Simultaneous High-Resolution kHz-Rate 2-D Conserved Scalar and 3 -Component Velocity Field Measurements in Gas-Phase Turbulent Jets** M. Papageorge; J.A. Sutton
3:30-4:00 PM	**Comparing Tomographic Reconstruction Algorithms for Plenoptic-PIV** T.W. Fahringer; B.S. Thurow
4:00-4:30 PM	**Multi-parameter estimation for spatially-resolved measurement of two-component velocity using absorption tomography** M. Gamba
4:30-5:00 PM	**Particle Image Velocimetry Applications Using Fluorescent Dye-doped Particles** B.J. Petrosky; K.T. Lowe; P.M. Bardet; P.I. Tiemsin; C.J. Wohl; P.M. Danehy; M. Andre

5:00-5:30 PM	**An Experimental Investigation on Supercooled Large Droplet Icing by using Molecular Tagging Thermometry Technique** H. Hu; H. Li; F. Chen
2:00 PM-5:30 PM, Destin 1, **APA-25. Aerodynamic Testing: Wind Tunnel & Flight Testing II**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Brian McGrath, JHU/Applied Physics Laboratory; Co-Chair: John Farnsworth, University of Colorado Boulder	
2:00-2:30 PM	**Implementation of an innovative ice crystal generation system to the Icing Wind Tunnel Braunschweig** A. Baumert; S.E. Bansmer; M. Bacher
2:30-3:00 PM	**Stall Behavior of the HINVA KH-A320-HA Highlift Model in ETW** N. Bier; R. Rudnik; J. Quest; A. Rechlin
3:00-3:30 PM	**Experimental Study of Splitter Plates for Use with Semispan Wing Models** J.M. Diebold; B. Woodard; M. Monastero; M. Bragg
3:30-4:00 PM	**Experimental Study on Aerodynamic Characteristics of Blended-Wing-Body by a Wake Integration Method** M. Kashitani; Y. Suganuma; H. Date; S. Nakao; Y. Takita; Y. Yamaguchi
4:00-4:30 PM	**Reynolds Number Effects on Flow Topology Above Blunt-edged Delta Wing VFE-2 Configurations** M. Said; S.B. Mat; S. Mansor; A. Abdul-Latif; T. Mat Lazim
4:30-5:00 PM	**Compressible Boundary Layer Turbulence Transition Measurements with In-depth thermocouples** X. Zhao
2:00 PM-5:30 PM, Destin 2, **APA-26. Applied CFD & Numerical Correlations with Experimental Data I**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Mark Jurkovich, US Air Force	
2:00-2:30 PM	**A Numerical Study on Transitional Flows by Means of a Correlation-Based Transition Model** G.O. Halila; E.V. Bigarella; J.F. Azevedo
2:30-3:00 PM	**Further Developments to a Local Correlation Based Roughness Model for Boundary Layer Transition Prediction** C.M. Langel; R. Chow; C.P. Van Dam
3:00-3:30 PM	**Effects of Step-Excrescence Location on Swept-Wing Transition** B.K. Crawford; G.T. Duncan; M.W. Tufts; W.S. Saric; H.L. Reed
3:30-4:00 PM	**Helicopter Blade NACA 8H12 Performance Prediction with Laminar-Turbulent Transition Effects: Integral Boundary-Layer and CFD Results compared with Experimental Data** G.A. Silva; D. de Andrade; C.F. Rafael; D.M. Pio
4:00-4:30 PM	**Fluid-Structure Interaction of a Variable Camber Compliant Wing** S.C. Miller; M.P. Rumpfkeil; J.J. Joo

2:00 PM-5:30 PM, Naples 1, **APA-27. Flow Control Applications & Demonstrations (Active & Passive) II**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Carl Tilmann, Air Force Reseach Laboratory; Co-Chair: Lawrence Ukeiley, University of Florida	
2:00-2:30 PM	**Experiments with Vortex Generators applied to a Notchback Car Model** D. Wieser; C. Nayeri; C.O. Paschereit
2:30-3:00 PM	**Experimental Investigation of Vortex Generator Effect on Two- and Three-Dimensional NASA Common Research Models** S. Koike; K. Nakakita; T. Nakajima; S. Koga; M. Sato; H. Kanda; K. Kusunose; M. Murayama; Y. Ito; K. Yamamoto
3:00-3:30 PM	**Effect of Vortex Generators on Transonic Swept Wings** Y. Ito; K. Yamamoto; K. Kusunose; S. Koike; K. Nakakita; M. Murayama; K. Tanaka
3:30-4:00 PM	**Experimental Study of Fillets to Reduce Corner Effects in an Oblique Shock-Wave/Boundary-Layer Interaction** S.M. Hirt
4:00-4:30 PM	**LES Study on Mechanism of Reduction of Shock Induced Flow Separation by MVG** Y. Yang; Y. Yan; C. Liu
4:30-5:00 PM	**The Use of Actuated Flexible Plates for Adaptive Shock Control Bumps** E.R. Jinks; P.J. Bruce; M.J. Santer
2:00 PM-5:30 PM, Naples 2, **APA-28. Special Session: Simulation of Rotor in Hover - Rotorcraft DG I**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Nathan Hariharan, CREATE-AV; Co-Chair: T Alan Egolf, Sikorsky Aircraft Corporation	
2:00-2:30 PM	**Standardized Evaluation of S-76 Rotor-in-hover: Summary of the first (2014) special session** N.S. Hariharan; T. Egolf; L.N. Sankar
2:30-3:00 PM	**Hover Performance Assessment of Several Tip Shapes using OVERFLOW** R. Narducci
3:00-3:30 PM	**Hover Predictions for the S-76 Rotor with Tip Shape Variation using CREATE-AV Helios** R. Jain
3:30-4:00 PM	**The Effects of Turbulence Modelings on CFD Simulations of S76 Hovering Rotor** P. Anusonti-Inthra
4:00-4:30 PM	**Assessment of S-76 Rotor Aerodynamic Performance in Hover on Unstructured Mixed Meshes** J. Hwang; J. Choi; O. Kwon
4:30-5:00 PM	**Analysis of a Hovering Rotor using UT-GENCAS: A Modified Hybrid Navier-Stokes/Free-Wake Method** B. Min; B. Wake
5:00-5:30 PM	**Predicting the Influence of Blade Tip Shape on Hovering Rotor Performance with Comprehensive Analyses** G.R. Whitehouse; D.A. Wachspress; T.R. Quackenbush

2:00 PM-5:30 PM, Miami 3, **APA-29. Special Session: Low Boom Activities II**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Kenrick Waithe, Gulfstream Aerospace Corporation; Co-Chair: Linda Bangert, NASA Langley Research Center	
2:00-2:30 PM	**Analysis of a Low Boom Supersonic Flying Wing Preliminary Design** J. Gan; G. Zha
2:30-3:00 PM	**Unstructured Grids for Sonic Boom Analysis and Design** R.L. Campbell; S. Nayani; M. Lynde
3:00-3:30 PM	**Sonic Boom Pressure Signature Uncertainty Calculation and Propagation to Ground Noise (Invited)** E. Walker; J.T. Pinier; T. West; K. Bretl
3:30-4:00 PM	**Near field Sonic Boom calculation of Benchmark Cases** J. Gan; G. Zha
4:00-4:30 PM	**Near Field Pressure Measurement around Free Flight 69 Degree Swept Back Delta Wing Model** A. Toyoda; A. Sasoh; T. Imaizumi; T. Ooyama; M. Kanamori; T. Aoyama
2:00 PM-5:30 PM, Osceola Ballroom 6, **AS-05. Adaptive Actuation**, Technical Paper, **23nd AIAA/AHS Adaptive Structures Conference**, Chair: Aditi Chattopadhyay, Arizona State University; Co-Chair: Jeffrey Kauffman, University of Central Florida	
2:00-2:30 PM	**Stiffness Control with Pneumatic Artificial Muscle Inclusions in a Cellular Honeycomb Unit** M. Pontecorvo; F. Gandhi; F. Foerster
2:30-3:00 PM	**Semi-Active Control of Torsional Vibrations Using a New Hybrid Torsional Damper** E. Abouobaia; R. Bhat; R. Sedaghati
3:00-3:30 PM	**New methodology for the controller of an electrical actuator for morphing a wing** M. Tchatchueng Kammegne; S. Khan ; R. Botez
3:30-4:00 PM	**Galloping Piezoelectric Energy Harvester with Bio-inspired Square Bluff Body** F. Ewere; G. Wang; K. Frendi
4:00-4:30 PM	**Optimal Resonance Frequency Detuning Switch Trigger Determination Using Measurable Response Characteristics** G.K. Lopp; J.L. Kauffman
4:30-5:00 PM	**Design and Testing of a FMC Actuated Morphing Aileron** E.B. Doepke; M. Philen
2:00 PM-5:30 PM, Sanibel 2, **FD-32. CFD Methods V**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: Marco Fossati, McGill University; Chair: Gecheng Zha, University of Miami	
2:00-2:30 PM	**Dynamic Mesh Deformation with Radial Basis Functions for the Non-Linear Frequency Domain Method** P. Tardif; S. Nadarajah

2:30-3:00 PM	**Development of a Jacobian-free Finite Element Solver for Aerothermodynamic Design** M. Fossati; W.G. Habashi; S. Gao; P. Yin; D. Isola; G. Baruzzi; I. Ozcer
3:00-3:30 PM	**Adjoint and Truncation Error Based Adaptation for Finite Volume Schemes with Error Estimates** J.M. Derlaga; T. Phillips; C.J. Roy; J. Borggaard
3:30-4:00 PM	**Implicit Time Marching Methods for Large-Scale High-Accuracy Simulations of Compressible Flows** Y. Du; J.A. Ekaterinaris
4:00-4:30 PM	**Accuracy of Discretization Error Estimation by the Error Transport Equation on Unstructured Meshes** G. Yan; C.F. Ollivier Gooch
4:30-5:00 PM	**A Primitive Variable Central Flux Scheme for All Mach Number Flows** K. Shi; S. Morris; A. Jemcov
2:00 PM-5:30 PM, Sun Ballroom A, **FD-33. Current Challenges for Computational Fluid Dynamics, Industry and Government Interests II (Invited)**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: HT Huynh, NASA Glenn Research Center; Co-Chair: Norbert Kroll, DLR - German Aerospace Center	
2:00-2:30 PM	**Status and challenges of CFD for aircraft design at Dassault Aviation (Invited)** M. Mallet
2:30-3:00 PM	**Current challenges for CFD at Onera (Invited)** V. Couaillier
3:00-3:30 PM	**Current Status and Challenges in CFD at the DLR Institute of Aerodynamics and Flow Technology** N. Kroll
3:30-4:00 PM	**The Challenges of Present and Future Industrial CFD (Invited)** C. Hirsch
2:00 PM-5:00 PM, Sanibel 3, **FD-34. Flow Control (Fundamentals and Technology) III**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: Miguel Visbal, USAF AFRL/RQVA; Co-Chair: Ismet Gursul, University of Bath	
2:00-2:30 PM	**Flow Control on an Airfoil in Fully-Reversed Condition with Actuation on Both Leading and Trailing Edges** C.J. Clifford; M. Samimy
2:30-3:00 PM	**Control of Dynamic Stall on a Pitching Airfoil Using High-Frequency Actuation** M.R. Visbal
3:00-3:30 PM	**Parametric Optimization of Control for a Post-Stall Airfoil Using Pulsed Jets** K.D. Hipp; S.I. Benton; M.M. Walker; J.P. Bons
3:30-4:00 PM	**Post-Stall Lift Enhancement of a Flat Plate Airfoil by Suction** Z. Wang; I. Gursul; J. Wu
4:00-4:30 PM	**Experimental Investigation of the Aerodynamic Lift Response of an Active Finite Gurney Flap** A.B. Bach; R. Berg; G. Pechlivanoglou; C. Nayeri; C.O. Paschereit

4:30-5:00 PM	**Wake Vortex Field of an Airfoil Equipped with an Active Finite Gurney Flap** A.B. Bach; G. Pechlivanoglou; C. Nayeri; C.O. Paschereit
2:00 PM-5:30 PM, Tallahassee 2, **FD-35. Fundamental Vortex Flows and Channel Flows,** Technical Paper, **53rd AIAA Aerospace Sciences Meeting,** Chair: Upender Kaul, NASA ARC; Co-Chair: Yee Chee See, University of Michigan	
2:00-2:30 PM	**Vortex force and lift induced drag in compressible flows** B. Mele; M. Ostieri; R. Tognaccini
2:30-3:00 PM	**Vortex structure of low-aspect-ratio wings in sideslip** A.C. DeVoria; K. Mohseni
3:00-3:30 PM	**Prediction of Turbulent Secondary Flows in Ducts Using Equilibrium Wall-Modeled LES** Z.P. Vane; S.K. Lele
3:30-4:00 PM	**An Experimental Study of Homogeneous Anisotropic Turbulence in Channel Flow** T.A. Slais; B.A. Ochs; D.E. Scarborough; S. Menon; N.R. Grady; R.W. Pitz
4:00-4:30 PM	**Adverse Pressure Gradient Effects in the Turbulent Kinetic Energy Budget for Channel Flows** L.A. Schiavo; A.B. Jesus; J.F. Azevedo; W.R. Wolf
4:30-5:00 PM	**Investigation on Turbulence Characteristics of Channel Flow over the Compliant Wall** N. Fujimatsu
2:00 PM-5:30 PM, Daytona 2, **FD-36. Multiphase Flows,** Technical Paper, **53rd AIAA Aerospace Sciences Meeting,** Co-Chair: Chon-Yin Tsai, Lockheed Martin Space Systems; Co-Chair: John Kuhlman, West Virginia University	
2:00-2:30 PM	**Modelling of Drop Deformation and Breakup** C. Rodrigues; J.M. Barata; A.R. Silva
2:30-3:00 PM	**Fruit Fly Impact Outcomes and Residue Components on an Aerodynamic Surface** K. Krishnan; A. Milionis; M. Starr; E. Loth
3:00-3:30 PM	**Stress dependent slip boundary condition for single- and two-phase fluid flow on a substrate** J.J. Thalakkottor; K. Mohseni
3:30-4:00 PM	**Spray Droplet Impingement onto a Smooth Flat Surface** J. Kuhlman; J. Taylor
2:00 PM-5:30 PM, Captiva 2, **FD-37. Turbulence Modeling I,** Technical Paper, **53rd AIAA Aerospace Sciences Meeting,** Co-Chair: Peter Hamlington; Co-Chair: Zhi Wang, University of Kansas	
2:00-2:30 PM	**Wall - Distance - Free Modifications to Spalart - Allmaras Turbulence Model** M. Rahman; R.K. Agarwal; M. Lampinen; T. Siikonen
2:30-3:00 PM	**A priori and a posteriori evaluations of subgrid stress models with the Burgers' equation** Y. Li; Z.J. Wang

3:00-3:30 PM	**New Approaches in Turbulence and Transition Modeling Using Data-driven Techniques** K. Duraisamy; Z.J. Zhang; A. Singh
3:30-4:00 PM	**Autonomic Subgrid-Scale Closure for Large Eddy Simulations** R. King; P.E. Hamlington; W. Dahm
4:00-4:30 PM	**CPR High-order Discretization of the RANS Equations with the SA Model** C. Zhou; Z.J. Wang
4:30-5:00 PM	**A Machine Learning Strategy to Assist Turbulence Model Development** B.D. Tracey; K. Duraisamy; J.J. Alonso
5:00-5:30 PM	**Closure in Reduced-Order Model of Burgers Equation** H. Imtiaz; I. Akhtar
2:00 PM-5:30 PM, Sun Ballroom 6, **FD-38. Unsteady Flow II**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Kenneth Granlund, Air Force Research Laboratory; Co-Chair: Zhili Zhang, University of Tennessee	
2:00-2:30 PM	**Unsteady Behavior of a Pressure-Induced Turbulent Separation Bubble** J. Weiss; A. Mohammed-Taifour; Q. Schwaab
2:30-3:00 PM	**Investigation of Low-Pressure Turbine Endwall Flows: Simulations and Experiments** A. Gross; R. Sondergaard
3:00-3:30 PM	**Complex Geometry Effects on Subsonic Cavity Flows** K.M. Casper; J.L. Wagner; S.J. Beresh; J. Henfling; R. Spillers; B.O. Pruett
3:30-4:00 PM	**Acoustics of a Supersonic Cavity with a Generic Store** G. Robertson; R. Kumar; S. Doyle; M. Baker; K. Roughen; R.A. Johnson
4:00-4:30 PM	**Response of a Store with Tunable Natural Frequencies in Compressible Cavity Flow** J.L. Wagner; K.M. Casper; S.J. Beresh; J. Henfling; R. Spillers; B.O. Pruett
4:30-5:00 PM	**Low-Frequency Unsteadiness in 3D Shock-Wave/Boundary-Layer Interactions in a Supersonic Crossflow** D. Drikakis; Z. Rana
5:00-5:30 PM	**Bluff-body wake stability for unsteady inflow conditions** T. Cleaver; K.O. Granlund; A. Comer; A.M. Briones; V. Belovich
2:00 PM-5:30 PM, Daytona 1, **FD-39. Wing Aerodynamics I**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Anya Jones, University of Maryland; Co-Chair: Kunihiko Taira, Florida State University	
2:00-2:30 PM	**Effect of Aspect Ratio and Leading and Trailing Edge Form on the Flow Around an Impulsively Pitching Flat Plate** O. Son; O. Cetiner
2:30-3:00 PM	**Vortex Characterization and Force Production on Two- and Three-Dimensional Wing Kinematics** F.H. Manar; P. Mancini; A.R. Jones
3:00-3:30 PM	**Three Dimensional Unsteady Wake of a Trapezoidal Pitching Panel** T.T. Rice; M.A. Green

3:30-4:00 PM	**Aerodynamic Comparison of Flat and Cambered Frames for Flexible MAV Wings** A.H. Wrist; Z. Zhang; D. Pepley; J.P. Hubner
4:00-4:30 PM	**Direct Numerical Simulations of Membrane Wings at Low Reynolds Number** S. Serrano Galiano; R.D. Sandberg
4:30-5:00 PM	**High fidelity simulations of electroactive membrane wings** G. Cetraro; R.D. Sandberg
2:00 PM-5:30 PM, Sun Ballroom C, **GEPC-04/SAT-01. Green Engineering/Society and Aerospace Technology**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Robert Justice, The Georgia Center of Innovation for Aerospace	
2:00-2:30 PM	**Regenerative Electric Flight Synergy and Integration of Dual role Machines** J. Barnes
2:30-3:00 PM	**Model of Fast Pyrolysis of a Small Volume-Fraction of Biomass Within an Gas of Transient Temperature and Pressure** N.J. Parziale
3:00-3:30 PM	**Maple Seed Performance as a Wind Turbine** J.R. Holden; T.M. Caley; M.G. Turner
3:30-4:00 PM	**Antares DLR H2 – Test bed for electric propulsion** J. Kallo; S. Flade; T. Stephan; J. Schirmer
4:00-4:30 PM	**NASA Innovation Ecosystem: Innovation for Government Technology** J.A. Hardash; A. Landegger; B. Decker; V. Thompson
4:30-5:00 PM	**Role of UAVs in Daily Life** A. Rashid; Z. Shahid
2:00 PM-5:30 PM, Miami 1, **GNC-25. Robust and Fault Tolerant Control** , Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Chair: Siddhartha Mehta, Vanderbilt University; Co-Chair: Francois-David Hugon, Gulfstream Aerospace Corporation	
2:00-2:30 PM	**Disturbance Rejection using Micro-jet Actuators with a MPC Policy** M. McCourt; J. Klotz; S.S. Mehta; J.W. Curtis
2:30-3:00 PM	**Diverging Engine Failure Paths on Standard Instrument Departures** B.H. Masson; M. Bain; J. Page
3:00-3:30 PM	**Fault Tolerant Control Design for the Longitudinal Aircraft Dynamics using Quantitative Feedback Theory** D. Ossmann
3:30-4:00 PM	**Air Data Sensor Fault Detection and Diagnosis with Application to Real Flight Data** P. Lu; L. Van Eykeren; E. Van Kampen; Q. Chu
4:00-4:30 PM	**Active Fault-Tolerant Control System using Incremental Backstepping Approach** P. Lu; E. Van Kampen
4:30-5:00 PM	**Pilot-in-the-Loop Evaluation of a Bio-Inspired Adaptive Fault Tolerant Control System in a Motion Based Flight Simulator** A.E. Perez Rocha; H. Moncayo; A. Togayev; M.G. Perhinschi; D. Al Azzawi

2:00 PM-5:00 PM, Sun Ballroom 3, **GNC-26. Trajectory Planning and Optimization II**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Chair: David Doman, Air Force Research Laboratory; Co-Chair: Praveen Shankar, California State Univ	
2:00-2:30 PM	**Trajectory Design and Coverage Control for Solar-Powered UAVs** S. Vasisht; M. Mesbahi
2:30-3:00 PM	**Design of a Track Guidance Algorithm for Formation Flight of UAVs** D. Lee; S. Kim; J. Suk
3:00-3:30 PM	**An Optimal Control Approach to Aircraft Automatic Ground Collision Avoidance** A.W. Suplisson; R. Cobb; W. Baker; D. Jacques
3:30-4:00 PM	**Lyapnov-Based Three-Dimensional Nonlinear Path-Following Guidance Law** N. Cho; Y. Kim
4:00-4:30 PM	**Correlation between Flight Time and Fuel Consumption in Airliner Flight Plan with Trajectory Optimization** N.K. Wickramasinghe; M. Brown; S. Fukushima; Y. Fukuda; A. Harada; Y. Miyazawa
2:00 PM-5:30 PM, Sun Ballroom 4, **GNC-27. Nonlinear Control of Aircraft/UAV**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Co-Chair: Max Spetzler, University of Washington; Chair: Moshe Idan, Technion - Israel Institute of Technology	
2:00-2:30 PM	**Nonlinear H-infinity Control applied to a UAS in Trajectory Following** G. Garcia; S. Keshmiri
2:30-3:00 PM	**Continuation Analysis of Nonlinear Systems with Equality Constraints on States, Parameters, and Eigenvalues** M. Spetzler; A. Narang-Siddarth
3:00-3:30 PM	**Integrator-Backstepping Control Design for Nonlinear Flight System Dynamics** T.T. Tran; B.A. Newman
3:30-4:00 PM	**Seeker Head Line-of-Sight Sliding Mode Control** G. Fursht; M. Idan
4:00-4:30 PM	**Advanced Sliding Mode Online Training for Neural Network Flight Control Applications** P. Schnetter; J. Kaste; T. Krüger
2:00 PM-5:30 PM, Sun Ballroom 2, **GNC-28. Guidance, Navigation and Control Concepts in Air Traffic Control Systems I**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Chair: Animesh Chakravarthy, Wichita State University; Co-Chair: Xiaoli Bai	
2:00-2:30 PM	**Intent Based Trajectory Prediction by Multiple Model Prediction and Smoothing** Y. Liu; X. Li
2:30-3:00 PM	**The Application of Probability Flow for Conflict Detection near Airports** L.J. Pienaar; T. Jones
3:00-3:30 PM	**Enhancing the Traffic Management Advisor's Schedule by Time Advance** M.G. Wu; H. Swenson

3:30-4:00 PM	**Near-Optimal Conflict-Free Trajectory Generation in the Presence of Uncertainty** Y. Matsuno; T. Tsuchiya
4:00-4:30 PM	**Evaluation of Time Arrival Uncertainties Associated with NextGen FMS Capabilities** V.V. Vaddi; X. Bai; S. Park
4:30-5:00 PM	**Optimization Approaches to the Single Airport Ground Hold Problem** J. Cox; M.J. Kochenderfer
2:00 PM-5:30 PM, Sun Ballroom 5, **GNC-29. Spacecraft Guidance, Navigation, and Control III**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Chair: Ozan Tekinalp, Middle East Technical University; Co-Chair: Steeve Kowaltschek, European Space Agency	
2:00-2:30 PM	**Receding-Horizon Unscented Kalman Filter using Successive Unscented Transformation for Spacecraft Attitude Estimation** R. Hirasawa; Y. Nakajima; M. Takahashi
2:30-3:00 PM	**A Multi Sensor Based Integrated Navigation for Pin-Point Landing on Mars** Z. Yu; R. Xu; P. Cui
3:00-3:30 PM	**Star Position Estimation Improvements for Accurate Star Tracker Attitude Estimation** T. Delabie
3:30-4:00 PM	**Interacting Multiple Model Estimation for Spacecraft Maneuver Detection and Characterization** S. Lee; I. Hwang
4:00-4:30 PM	**Autonomous Optical Navigation for Earth-Observing Satellites using Coastline Matching** M. Straub; J.A. Christian
4:30-5:00 PM	**Satellite Angular Velocity Estimation Based on Optical Flow Technique** L. Kazemi; J.P. Enright; T. Dzamba; K. Raahemifar
2:00 PM-5:30 PM, Sanibel 1, **GT-04. Hypersonic Test Capabilities I (Invited)**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Karen Berger, NASA-Langley Research Center; Co-Chair: John Lafferty, AEDC	
2:00-2:30 PM	**Hypersonic Test Capabilities in Tunnels B and C at AEDC's von Karman Facility** M. Mills
2:30-3:00 PM	**NASA Langley Aerothermodynamics Laboratory: Hypersonic Testing Capabilities** K.T. Berger; K.E. Hollingsworth; S.A. Wright; S.J. Rufer
3:00-3:30 PM	**Modernization of Sandia's Hypersonic Wind Tunnel** S.J. Beresh; K.M. Casper; J.L. Wagner; J. Henfling; R. Spillers; B.O. Pruett
3:30-4:00 PM	**Review of CUBRC LENS Hypervelocity Tunnels and Recent Research and Testing Activities** M.S. Holden; T.P. Wadhams; M.G. MacLean; A.T. Dufrene
4:00-4:30 PM	**Hypersonic Testing Capabilities at the NASA Ames Ballistic Ranges** M.C. Wilder; D.W. Bogdanoff; C.J. Cornelison

4:30-5:00 PM	**The Hypervelocity Wind Tunnel No. 9; Continued Excellence Through Improvement and Modernization** J.F. Lafferty
2:00 PM-5:30 PM, Emerald 1, **GTE-06. Compressors**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Robert Webster, University of Tennessee at Chattanooga	
2:00-2:30 PM	**Vane Wake Characterization Including Variability in a Multistage Compressor** J. Methel; N.R. Smith; N.L. Key
2:30-3:00 PM	**Experimental and Computational Study of Forced Response in a Multistage Axial Compressor** D. Monk; W. Murray; N.L. Key; R. Fulayter
3:00-3:30 PM	**Reduction of Rotor Forced Response Using Stator Asymmetry in a Multistage Compressor** D. Monk; N.L. Key; R. Fulayter
3:30-4:00 PM	**Computational Simulation of the Fan and Low-pressure Compressor Stages of the Energy Efficient Engine** R.S. Webster; K. Sreenivas; C.B. Hilbert
4:00-4:30 PM	**Validation and Simulation of a Small-Scale Pressure Wave Supercharger** M.R. Mataczynski; M.D. Polanka; J.B. Nees; D.E. Paxson
2:00 PM-5:30 PM, Emerald 3, **HSABP-09/GTE-08. Pressure Gain Combustion - Pulse Detonation Engines**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Kailas Kailasanath, Naval Research Laboratory; Co-Chair: Daniel Paxson, NASA Glenn Research Center	
2:00-2:30 PM	**10 kHz Mid-IR TDLAS of Detonation Events with a Fiber-Coupled Laser Diagnostic** B. Sell; M. Fotia; A.W. Caswell; J. Hoke; F. Schauer
2:30-3:00 PM	**Development and Investigation of an Air-Breathing, Pulse Detonation Engine-Crossover System** R.B. Driscoll; A.C. St. George; V. Anand; D.E. Munday; E.J. Gutmark
3:00-3:30 PM	**Experimental Magnetohydrodynamic Energy Extraction from a Pulsed Detonation Tube** K. Teope; P. King; F. Schauer; J. Hoke
3:30-4:00 PM	**Study of Unsteady Thrust Characteristics of Pulse Detonation Engines** D.D. Joshi; F.K. Lu
4:00-4:30 PM	**Optical Measurement of Detonation with a Focusing Schlieren Technique** C.A. Stevens; J. Hoke; F. Schauer
4:30-5:00 PM	**Effect of initial flow velocity on the flame propagation in obstructed channels** J.A. Gray; J.P. Moeck; C.O. Paschereit
5:00-5:30 PM	**Performance Model for Fully and Partially Filled Pulse Detonation Engine** R.t. Bello; F.K. Lu

2:00 PM-5:00 PM, Osceola Ballroom 3, **IS-09. Invited Panel Discussion - Roadmap for Intelligent Systems**, Panel, **AIAA Infotech @ Aerospace (non-paper sessions)**	
2:00 PM-5:30 PM, Sarasota 1, **MAT-10. Materials & Design for Additive Manufacturing**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Joseph Koo, The University of Texas at Austin; Co-Chair: Steven Wanthal, The Boeing Company; Co-Chair: Teresa Clement, Raytheon	
2:00-2:30 PM	**Electrically Conductive Polyamide 11 Nanocomposites for Selective Laser Sintering: Properties Characterization** B.P. Ong; H. Wu; J.H. Koo
2:30-3:00 PM	**Fatigue Behavior of a Titanium Alloy Additively Manufactured by a Direct Deposition Method** N. Shamsaei; M. Lugo; D. Seely ; S.M. Thompson; A.J. Sterling
3:00-3:30 PM	**Microstructural Features and Mechanical Properties of 316L Stainless Steel fabricated by Laser Additive Manufacture** D. Seely ; N. Shamsaei; B. Patton
3:30-4:00 PM	**Effect of Substrate Thickness on Micro-Hardness of Direct Laser Deposited Ti-6Al-4V Parts** G.J. Marshall; W.J. Young; S.M. Thompson; D. Seely ; N. Shamsaei
4:00-4:30 PM	**Reducing Production Costs of E-Mobility Components by Using Polyjet 3D Printing** C. Reinders
2:00 PM-5:30 PM, Sarasota 2, **MAT-11. Fatigue & Fracture II**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Steven Arnold, University of Heidelberg, Germany; Co-Chair: Josh Dustin, GE-Aviation	
2:00-2:30 PM	**Experimental and numerical monitoring of strain gradients in notched composites under tension loading** B. Aidi; S. W.Case
2:30-3:00 PM	**Investigation of Cyclic Behavior and Structure-property Relations of a 304 Stainless Steel** M. Lugo; J.W. Pegues; N. Shamsaei
3:00-3:30 PM	**Combined Multiscale Creep Strain and Creep Rupture Modeling for Composite Materials** E.M. Jensen; R.S. Fertig
3:30-4:00 PM	**Multiscale Stochastic Analysis of FRP based on variability in fiber volume fraction, epoxy stiffness and strength** S. Sanei; E.M. Jensen; R.S. Fertig
2:00 PM-5:30 PM, Sarasota 3, **MDO-07. MDO: Decision Making/Value Driven Design**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Jason Hicken, Rensselaer Polytechnic Institute; Co-Chair: Graeme Kennedy, Georgia Institute of Technology	
2:00-2:30 PM	**Sensitivity analysis of surrogate-based methodology for real-time structural assessment.** L. Mainini; K.E. Willcox

2:30-3:00 PM	**Defining and Mitigating Requirements-Induced Value Gaps** A. Abbas; C.L. Bloebaum; B. Mesmer
3:00-3:30 PM	**Organization Design in the Context of Value-Driven Design** B. Kwasa; C.L. Bloebaum; B. Mesmer
3:30-4:00 PM	**Variable-Fidelity Design Using Kriging Surrogate Model with Fidelity Indicator** Y. Jo; S. Choi; D. Lee
2:00 PM-5:00 PM, Sun Ballroom 1, **MST-11. MST Panel: Flight Simulation Training Device Qualification Testing**, Panel, **AIAA Modeling and Simulation Technologies Conference (non-paper sessions)**, Chair: Brandon Mazzacavallo, The Boeing Company	
2:00 PM-5:30 PM, Naples 3, **MVC-05. Visualization for Feature Detection, Integration Techniques and Frameworks, and Multi-Scale Models**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Roger Davis, University of California Davis	
2:00-2:30 PM	**Visualization and Post-Processing of Large Scale Engineering Applications using In-Situ Data Extracts and Proper Orthogonal Decomposition** E.P. Duque; D.E. Hiepler; S.E. Gorrell; M. Jones; T. Blanc
2:30-3:00 PM	**Recent advances in the integration of CFD into the missile concept design process** N.J. Taylor
3:00-3:30 PM	**Analysis of Stable and Unstable Manifolds in Fluid Flows Using Lagrangian Coherent Structures** A. Ahmed; I. Akhtar; I. Aziz
3:30-4:00 PM	**Visualization and Quantification of Rotor Tip Vortices in Helicopter Flows** D.L. Kao; J.U. Ahmad; T. Holst
4:00-4:30 PM	**Design Sensitivity Calculations Directly on CAD-based Geometry** J. Dannenhoffer; R. Haimes
2:00 PM-5:30 PM, Osceola Ballroom 5, **NDA-06. Model Verification and Validation & Optimization under Uncertainty**, Technical Paper, **17th AIAA Non-Deterministic Approaches Conference**, Chair: Ha-Rok Bae, Wright State University; Co-Chair: Jeffrey Brown	
2:00-2:30 PM	**Experimental Validation of an Optically Measured Geometric Mistuning Model Using a System ID Approach** A. Kaszynski; J. Brown; J. Beck
2:30-3:00 PM	**Locally-Optimized Covariance Kriging for Engineering Design Exploration** D.L. Clark; H. Bae; R.C. Penmetsa
3:00-3:30 PM	**Validation of Geometric Mistuning Reduced-Order Models for Single and Dual Flow-Path Integrally Bladed Rotors** J.A. Beck; A. Kaszynski; O.E. Scott-Emuakpor; J. Brown
3:30-4:00 PM	**Evaluation of Model Validation Techniques in the Presence of Aleatory and Epistemic Input Uncertainties** I.T. Voyles; C.J. Roy

4:00-4:30 PM	**A Surrogate-based Adjustment Factor Approach to Multi-Fidelity Design Optimization** C.C. Fischer; R.V. Grandhi
4:30-5:00 PM	**Comparing Deterministic and Non-deterministic Optimization for Airfoil Shape Design** T. Kanno; W.A. Crossley
5:00-5:30 PM	**Decomposition-based Evolutionary Aerodynamic Robust Optimization with Multi-fidelity Point Collocation Non-intrusive Polynomial Chaos** P.S. Palar; T. Tsuchiya; G. Parks
2:00 PM-4:00 PM, Osceola Ballroom B, **PANEL-06. The Digital System Model - The New Frontier in Aerospace & Defense Acquisition**, Panel, **Forum 360**	
2:00 PM-5:30 PM, Emerald 2, **PC-15. Turbulent Combustion Models, their Foundations and Major Assumptions**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Chiping Li, Air Force Office of Scientific Research	
2:00-2:30 PM	**Insights into Model Assumptions and Road to Model Validation for Turbulent Combustion** V. Sankaran
2:30-3:30 PM	**Advances in the Simulation of Turbulent Combustion** J.C. Oefelein
3:30-4:30 PM	**Survey of Turbulent Combustion Models for Large-Eddy Simulations of Propulsive Flowfields** J.W. Foster; R.S. Miller
4:30-5:30 PM	**An analysis of the basic assumptions of turbulent combustion models with emphasis on high-speed flows** E. Gonzalez; S. Menon; R. Ranjan; A. Kerstein
2:00 PM-5:30 PM, Emerald 7, **PC-16. Laminar Flames**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: Hong Im, King Abdullah University of Science and Technology; Co-Chair: David Glaze, Sandia National Laboratories	
2:00-2:30 PM	**A Dynamic Fidelity Adaptive Modeling Framework for Combustion Systems Based on Local Estimation of Model Accuracy** Y. See; H. Wu; Q. Wang; M. Ihme
2:30-3:00 PM	**Multi-timescale and Correlated Dynamic Adaptive Chemistry and Transport Modeling of Flames in n-Heptane/Air Mixtures** W. Sun; Y. Ju
3:00-3:30 PM	**Towards direct simulations of counterflow flames with consistent differential-algebraic boundary conditions** P.D. Kourdis; J.R. Bellan; K.G. Harstad
3:30-4:00 PM	**Evaluation of Soot Models in Computing m-Xylene Jet Diffusion Flames** V.R. Katta; W. Wang; M.J. Linevsky; S.S. Iyer; T.A. Litzinger; B. Santoro; W.M. Roquemore
4:00-4:30 PM	**Modeling flame propagation and quenching in stratified mixtures** V.R. Katta; S. Zeppieri; M.B. Colket; W. Roquemore

4:30-5:00 PM	**Local Burning Rates and Heat Flux for Boundary Layer Diffusion Flames under Forced Flow** A.V. Singh; M.J. Gollner
5:00-5:30 PM	**Cool Flames Activated by Ozone Addition** C.B. Reuter; S. Won; Y. Ju
2:00 PM-5:30 PM, Emerald 5, **PDL-05. Plasma & Laser Physics I**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: Richard Miles, Princeton University; Co-Chair: Kunning Xu, University of Alabama in Huntsville	
2:00-2:30 PM	**Reducing the Breakdown Threshold in DC Microdischarges via Metal Nanoparticle Seeding** J.C. Sawyer; Z. Zhang
2:30-3:00 PM	**Arc breakdown in high-pressure large gap sources using surface streamer based initiation** M.V. Pachuilo; F. Stefani; R. Bengtson; L.L. Raja
3:00-3:30 PM	**Pre-breakdown processes in dielectric fluid in inhomogeneous pulsed electric fields** M.N. Shneider
3:30-4:00 PM	**Active Particles Production by Pulsed Nanosecond Discharge in Ambient Air. Quenching of Electronically Excited States of Nitrogen by O2 Molecules and O(3P) Atoms.** N. Popov
2:00 PM-5:30 PM, Emerald 8, **PDL-06. Astronautical Plasma Dynamics** , Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: Joseph Wang, University of Southern California; Co-Chair: Hideyuki Usui, Kobe University	
2:00-2:30 PM	**Drag Measurements in a Simulated Low-Earth Orbit Environment** C.A. Maldonado; A.D. Ketsdever
2:30-3:00 PM	**PIC Simulation on Plasma Flow Response to a Mesoscale Magnetic Dipole in Space** H. Usui; M. Umezawa; Y. Miyake
3:00-3:30 PM	**Numerical Simulations of Spacecraft-Plasma Interactions on Lunar Surface** D. Han; J.J. Wang
3:30-4:00 PM	**Electron Kinetic Characteristics in Plasma Plumes: Fully Kinetic Simulations** Y. Hu; J.J. Wang
4:00-4:30 PM	**Dynamics of Spacecraft Plume/Magnetosphere Interactions in Geostationary Earth Orbit** K.A. Stephani; I.D. Boyd
4:30-5:00 PM	**Plume Structure and Current-Voltage Characteristic Analysis for a Cathodic Plasma Contactor** Q. Xia; K. Xie; N. Guo; Y. Jia; X. Liu; Z. Wu
2:00 PM-5:30 PM, Osceola Ballroom 4, **SCS-07. Spacecraft Antennas and Apertures**, Technical Paper, **2nd AIAA Spacecraft Structures Conference**, Chair: Wendel Belvin, NASA-Langley Research Center; Co-Chair: James Moore, ManTech Nexolve Corporation	
2:00-2:30 PM	**Telescoping Solar Array Concept for Achieving High Packaging Efficiency** M.M. Mikulas; R.S. Pappa; J. Warren; G. Rose

2:30-3:00 PM	**Experimental Study of Reflector Shape Control under Various Thermal Conditions** A. Inagaki; H. Sakamoto; H. Tanaka; K. Ishimura; M. Okuma
3:00-3:30 PM	**Energy-Efficient Active Reflectors with Improved Mechanical Stability** S. Bradford; D. Hofmann; D. Kochmann
3:30-4:00 PM	**Optimal Placement of Actuators and Sensors for Gyroelastic Body from the Controllability and Observability Perspective** Q. Hu; Z. Wang; J. Zhang; Y. Jia; M. Liu; Z. Zhou
4:00-4:30 PM	**The Mechanical Design of a Mesh Ka-band Parabolic Deployable Antenna (KaPDA) for CubeSats** J.F. Sauder; M.W. Thomson
4:30-5:00 PM	**Spin-Stabilized Membrane Antenna Structures** M. Delapierre; S. Pellegrino
5:00-5:30 PM	**Thermal Distortion Testing of a 4-meter Microwave Reflector** S. Bradford
2:00 PM-5:30 PM, Sun Ballroom D, **SD-10. Special Session: Adaptive Aeroelastic Wing Shaping Control I**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Nhan Nguyen, NASA-Ames Research Center; Co-Chair: Scott Anders, NASA Langley Research Center	
2:00-2:30 PM	**Aeroelastic Analysis of Wind Tunnel Test Data of a Flexible Wing with a Variable Camber Continuous Trailing Edge Flap (VCCTEF)** N.T. Nguyen; E. Ting; S. Lebofsky
2:30-3:00 PM	**The design, construction, and tests of a concept aeroelastic wind tunnel model of a high-lift variable camber continuous trailing edge flap (HL-VCCTEF) wing configuration** N. Precup; M. Mor; E. Livne
3:00-3:30 PM	**Static Aeroelastic Modeling of a Sub-Scale Wind Tunnel Model with Novel Flap Concept** E. Ting; N.T. Nguyen; S. Lebofsky
3:30-4:00 PM	**Multidisciplinary Drag Optimization of Reduced Stiffness Flexible Wing Aircraft With Variable Camber Continuous Trailing Edge Flap** S. Lebofsky; E. Ting; N.T. Nguyen
4:00-4:30 PM	**Optimized Off-Design Performance of Flexible Wings with Continuous Trailing-Edge Flaps** D.L. Rodriguez; M.J. Aftosmis; M. Nemec; G.R. Anderson
2:00 PM-5:30 PM, Tampa 2, **SD-11. Special Session: Transformative Technologies for High-Speed/High-Efficiency Next-Gen Rotorcraft II**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Edward Smith, Pennsylvania State University; Co-Chair: Anubhav Datta, Science & Technology Corporation	
2:00-2:30 PM	**Aeromechanics of the Coaxial Compound Helicopter** C. Zhang; T.R. Quackenbush; H. Saberi; C. Sheng; T. Gaffey

2:30-3:00 PM	**Transient Hub Loads and Blade Deformation of a Mach-Scale Coaxial Rotor in Hover** C.G. Cameron; J. Sirohi; D. Uehara
3:00-3:30 PM	**Performance and Loads Prediction for a High Advance Ratio Coaxial Rotor** J. Schmaus; I. Chopra
3:30-4:00 PM	**Advanced Composite Wings for Whirl Flutter Augmentation: Wind Tunnel Model Design** J. Zhang; E.C. Smith
4:00-4:30 PM	**Aeroelastic Optimization for High-Speed, High-Efficiency Tiltrotors with Wing Extensions and Winglets** S. Kambampati; J. Zhang; E.C. Smith
4:30-5:00 PM	**Tube Compliance Effects on Fluidic Flexible Matrix Composite Devices for Rotorcraft Vibration Control** M.J. Krott; K. Miura; S. LaBarge; C. Rahn; E.C. Smith; P.Q. Romano
2:00 PM-5:30 PM, Tampa 3, **SD-12. Flutter, LCO and Aeroelastic Instabilities** , Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Jonathan Cooper, University of Bristol; Co-Chair: William Welsh, Sikorsky Aircraft Corporation	
2:00-2:30 PM	**The Influence of Steady Loading Parameters on Low-Pressure Turbine Flutter** J.J. Waite; R.E. Kielb; S.L. Bittner
2:30-3:00 PM	**Store-Induced Limit Cycle Oscillations due to Nonlinear Wing-Store Attachment** M.A. Padmanabhan; C.L. Pasiliao; E. Dowell
3:00-3:30 PM	**Whirl Flutter Analysis with Propeller Aerodynamic Derivatives Computed by Unsteady Vortex Lattice Method** Z. Wang; P. Chen
3:30-4:00 PM	**Effect of Embedded Control Surface Actuators on Active Aeroelastic Control** R.N. Brown; K.V. Singh; R.M. Kolonay
4:00-4:30 PM	**A Modification to the Enhanced Correction Factor Technique to Correlate With Experimental Data** R. Moreno; F. von Knoblauch; R. Narisetti; P.F. Taylor
4:30-5:00 PM	**In-Flight Aeroelastic Stability of the Thermal Protection System on the NASA HIAD, Part II: Nonlinear Theory and Extended Aerodynamics** B.D. Goldman; E. Dowell
5:00-5:30 PM	**Nonlinear airfoil torsional response induced by separated flows** F.D. Marques; D.A. Pereira; R.M. Vasconcellos
2:00 PM-5:30 PM, Osceola Ballroom 1, **SEN-02. Novel Sensor Systems**, Technical Paper, **AIAA Infotech @ Aerospace**, Chair: Manoranjan Majji, State University of New York at Buffalo	
2:00-2:30 PM	**Optical Flow Techniques for Wind-Velocity Sensing on a Small Unmanned Aircraft System** D. Pope; B. Argrow; D.A. Lawrence

2:30-3:00 PM	**A Low-Cost System for Wind Field Estimation Through Sensor Networks and Aircraft Design** R.J. Laurence; J.S. Elston; B. Argrow
3:00-3:30 PM	**Performance Evaluation of 3D Model-based Techniques for Autonomous Pose Initialization and Tracking** R. Opromolla; G. Fasano; G. Rufino; M. Grassi
3:30-4:00 PM	**Wing Shape Sensing from Measured Strain** C. Pak
2:00 PM-5:30 PM, Tampa 1, **STR-14. Design, Test and Analysis I**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Wenbin Yu, Purdue University; Co-Chair: Bruce Willis, Boeing Defense, Space & Security	
2:00-2:30 PM	**Thermally Driven Morphing with Hybrid Laminates and Metal Matrix Composites** E. Eckstein; A. Pirrera; P. Weaver
2:30-3:00 PM	**Mechanical Properties and Fatigue Behavior of 2D and 3D Woven PMC Airframe Structures at Elevated Temperature** M. Wilkinson; M.B. Ruggles-Wrenn
3:00-3:30 PM	**Topology Optimization of Additively-Manufactured, Lattice-Reinforced Penetrative Warheads** H. Richards; D. Liu
3:30-4:00 PM	**Significance of Geometric Nonlinearity in the Design of Thermally Loaded Structures** J.D. Deaton; R.V. Grandhi
4:00-4:30 PM	**Postbuckling Analysis of Composite Stiffened Panel under Shear Load** K. Umezawa; T. Aoki
4:30-5:00 PM	**Warping of Stiffened Composite Panels Due to Temperature Changes in the Curing Process** A. Przekop
5:00-5:30 PM	**Design and Evaluation of a Test Device for Thermal-Acoustical-Mechanical Fatigue Experiments** M. Sedlack; A. Jasmin; P. Lavandera; A. Gordon; R.C. Penmetsa
2:00 PM-5:30 PM, Tallahassee 3, **STR-15. Structural Stability**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Chiara Bisagni; Co-Chair: Johanne Heald, Canadian Space Agnecy	
2:00-2:30 PM	**Buckling Analysis of Axially Loaded Corrugated Cylindrical Shells** X. Ning; S. Pellegrino
2:30-3:00 PM	**Effect of Buckling Modes on the Fatigue Life and Damage Tolerance of Stiffened Structures** C.G. Davila; C. Bisagni; C. Rose
3:00-3:30 PM	**A Comparison of FEM and Semi-Analytical Method in the Buckling and Vibration of Non-Prismatic Columns under Tip Force and Self-Weight** J. Cifuentes; R.K. Kapania
3:30-4:00 PM	**Buckling analysis and optimization of blade stiffened variable stiffness panels** B.H. Coburn; Z. Wu; P. Weaver

4:00-4:30 PM	**Buckling and Postbuckling of Unitized, Stiffened Composite Panels** C.J. Kosztowny; A.M. Waas
4:30-5:00 PM	**Optimization of Damaged Composite Plates Under Buckling and Post buckling condition in Hygrothermal Environment employing an Inverse Hyperbolic Shear Deformation Theory** V.M. Sreehari; D.K. Maiti
2:00 PM-5:30 PM, Captiva 1, **TES-01. Thermal and Fluid Behavior in Power Systems**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Ryoichi Amano, University of Wisconsin-Milwaukee	
2:00-2:30 PM	**On the Modeling of Thermal Comfort in Heavy Truck Passengers Cabins** A. Omran; E.E. Khalil
2:30-3:00 PM	**Study of Liquid Breakup Process in Solid Rocket Motor Nozzle** R.S. Amano; Y. Yen; M. Hamman
3:00-3:30 PM	**Energy Efficient Designs of Low Carbon Buildings** E.E. Khalil; W. Ajami
3:30-4:00 PM	**Flow and Heat Transfer in a Rotating and Non-Rotating Wedge-Shaped Cooling Passage with Ribs and Pin Fins** I. Pardeshi; T. Shih; K.M. Bryden; R. Ames; R. Dennis; S. Ding
4:00-4:30 PM	**Modelling and Simulation on Ingress into the Rim Seal and Wheelspace of a Rotor-Stator Configuration** J. Liu; A. Weaver; T. Shih; C.M. Sangan; G.D. Lock
4:30-5:00 PM	**A Weave Design for Trailing-Edge Cooling** A. Weaver; J. Liu; T. Shih
2:00 PM-5:30 PM, Sun Ballroom B, **TP-07. Ablation and Surface Catalysis**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Alexandre Martin, University of Kentucky; Co-Chair: David Kuntz, Sandia National Laboratories	
2:00-2:30 PM	**Quantitative determination of species production from the pyrolysis of the Phenolic Impregnated Carbon Ablator (PICA)** H. Wong; J. Peck; J. Assif; J. Lachaud; N.N. Mansour
2:30-3:00 PM	**Conformal Phenolic Impregnated Carbon Ablator (C-PICA) Arcjet Testing, Ablation and Thermal Response** F.S. Milos; M. Gasch
3:00-3:30 PM	**Molecular simulations of surface ablation using reaction probabilities from molecular beam experiments and realistic microstructure** S.J. Poovathingal; T.E. Schwartzentruber; V. Murray; T. Minton
3:30-4:00 PM	**Microscale Simulations of Porous TPS Materials: Ablating Microstructures and Micro-tomography** E. Stern; I. Nompelis; T.E. Schwartzentruber; G.V. Candler
4:00-4:30 PM	**In-Situ Measurement of Ablation Fronts of A Low Density Ablator With An Ablation Sensor** T. Sakai; H. Nakazawa; Y. Dantsuka; K. Watanabe; K. Kitagawa; K. Hirai; Y. Ishida

4:30-5:00 PM	**Numerical Simulation of Regular Surface Patterns on Sublimating Ablative Materials** L. Trevino; G.V. Candler
5:00-5:30 PM	**Influence of Carbon Nitridation in a Nonequilibrium Finite-Rate Ablation Model** C. Alba; R.B. Greendyke; J. Marschall
2:00 PM-5:30 PM, Osceola Ballroom 2, **UMS-05. Unmanned Systems: Technologies and Applications II** , Technical Paper, **AIAA Infotech @ Aerospace**, Chair: Richard Prazenica, Embry-Riddle Aeronautical University, Daytona Beach	
2:00-2:30 PM	**Experimental Design of a Flapping Wing Micro Air Vehicle through Biomimicry of Bumblebees** M.J. Thompson; J. Burnett; D.M. Ixtabalan; D. Tran; A. Batra; A. Rodriguez; B. Steele
2:30-3:00 PM	**Development and Testing of an Unmanned Aerial System with Micro-Fiber Composite Actuators** M. Chan; H. Moncayo; A.E. Perez Rocha; R.J. Prazenica; D. Kim; B. Azizi
3:00-3:30 PM	**Optimizing Energy Efficiency of a Flapping Robotic Bird Through Application of Evolutionary Algorithms** B. Perseghetti; J. Gallagher; J.M. Goppert; S. Yantek; E. Matson; I. Hwang
3:30-4:00 PM	**Design of a Morphing MAV Wing Using Macro-Fiber Composite Actuators** K. Ofori-Atta; B. Azizi; R.J. Prazenica; D. Kim; S.N. Gangadharan
4:00-4:30 PM	**Search and Rescue using Unmanned Aerial Vehicles** S. Bhandari; A. Bettadapura; O. Dadian; M. Gan; J. Dayton
4:30-5:00 PM	**CO_2 Plume Detection Using UAS** C.T. Brown; T. Mitchell; J.D. Jacob
2:00 PM-5:30 PM, Emerald 4, **WE-11. Wind Turbine Aeroelasticity and Structural Dynamics**, Technical Paper, **33rd Wind Energy Symposium**, Chair: Carlo Bottasso, Technichse Universität München	
2:00-2:30 PM	**Aeroelastic Modeling of Wind Turbine Blades Using Harmonic Balance and γ-Re_θt Transition Model** J.C. Howison; K. Ekici; J. Thomas
2:30-3:00 PM	**FAST Modular Framework for Wind Turbine Simulation: New Algorithms and Numerical Examples** M.A. Sprague; J.M. Jonkman; B. Jonkman
3:00-3:30 PM	**Towards Multidisciplinary Wind Turbine Design using High-Fidelity Methods** M. Imiela; F. Wienke
3:30-4:00 PM	**Aeroelastic Time-Domain Simulation of SNL Smart Rotor Experiment** L. Bernhammer; R. De Breuker; G. van Kuik
4:00-4:30 PM	**Prediction and Alleviation of Flutter in Swept Wind Turbine Blades** S. Larwood

4:30-5:00 PM	**BeamDyn: A High-Fidelity Wind Turbine Blade Solver in the FAST Modular Framework** Q. Wang; N. Johnson; M.A. Sprague; J.M. Jonkman
2:00 PM-5:30 PM, Emerald 6, **WE-12. Wind Energy Atmospheric Physics and Inflow**, Technical Paper, **33rd Wind Energy Symposium**, Chair: Scott Schreck, NREL; Co-Chair: Sven Schmitz, Pennsylvania State University	
2:00-2:30 PM	**The effect of stability on the intermittent nature of atmospheric winds** M. Sherry
2:30-3:00 PM	**Turbulent wind field characterization and re-generation based on pitot tube measurements mounted on a wind turbine** M.M. Pedersen; T.J. Larsen; G.C. Larsen; H.A. Madsen
3:00-3:30 PM	**Turbulent Flow and Heat Transport over a Two-dimensional Steep Hill: Wind-tunnel Experiments** W. Zhang; C. Markfort; F. Porte-Agel
3:30-4:00 PM	**Real-Time Flow Prediction of Low-Level Atmospheric Turbulence** R. Kikuchi; T. Misaka; S. Obayashi
4:00-4:30 PM	**Comparing wall modeled LES and prescribed boundary layer approach in infinite wind farm simulations** H.S. Chivaee; R.F. Mikkelsen
4:30-5:00 PM	**Simulation of wind turbine wakes on locally refined Cartesian grids** D. Angelidis; F. Sotiropoulos
5:00-5:30 PM	**Development of CFD-based icing model for wind turbines: A case study of ice sensor** M.C. Pedersen; C. Yin; A. Billstein Andersson
6:00 PM-7:00 PM, Osceola Ballroom B, **LEC-05. SDM Lecture: Aerospace Structural Design and Safety: Do We Need Fewer Tests or More?** , Lecture, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference (non-paper sessions)**	

Thursday, January 08, 2015

Time	Session or Event Info
8:00 AM-9:00 AM, Osceola Ballroom CD, **PLNRY-04. Diversity & Inclusion in the Aerospace Workforce**, Plenary, **Forum**	
9:30 AM-12:30 PM, Emerald 2, **ABPSI-01. Propulsion Integration and Controls**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: Richard Scharnhorst, Boeing Defense, Space & Security; Co-Chair: Robert Nichols, The University of Alabama at Birmingham	
9:30-10:00 AM	**Estimation of optimal flight altitude for an aircraft** A. Singh; S. Dhawan

10:00-10:30 AM	**Dynamic Friction Measurements on a Small Engine Test Bench** K.P. Horn; A.K. Rowton; M.D. Polanka; J. Ausserer; P.J. Litke; K.D. Grinstead
10:30-11:00 AM	**Key Parameters Of Air Breathing Two-Stroke Combustion Engines For Integration Into Small Scale UAVs** O.K. Ariff; E. Salami; F.I. Romli
11:00-11:30 AM	**Validation of an Integrated Airframe and Turbofan Engine Simulation for Evaluation of Propulsion Control Modes** J.S. Litt; Y. Liu; T.S. Sowers; A. Owen; T. Guo
9:30 AM-12:30 PM, Naples 3, **ACD-04. Conceptual Aircraft Design Working Group (CADWG21) Panel:** ***How much fidelity in conceptual aircraft design?***, Panel, **53rd AIAA Aerospace Sciences Meeting (non-paper sessions)**, Chair: Timothy Takahashi, Arizona State University; Chair: Willem Anemaat, DARcorporation	
9:30 AM-12:30 PM, Captiva 1, **AFM-11. Flight Test and System Identification**, Technical Paper, **AIAA Atmospheric Flight Mechanics Conference**, Chair: Bret Leonhardt, DB Aircraft, LLC; Co-Chair: Jared Grauer, NASA Langley Research Center	
9:30-10:00 AM	**High Angle of Attack Model Identification with Compressibility Effects** J.N. Dias
10:00-10:30 AM	**Fuel State Reconstruction for Maneuvering Aircraft** E. Ozger
10:30-11:00 AM	**Quadrotor 6-DOF HIL Simulation and Verification Using a 6-axis Load Cell** T. Fields; L.M. Ellis; G. King
11:00-11:30 AM	**System Identification and Handling Quality Analysis of a UAV from Flight Test Data** O. Simsek; O. Tekinalp
11:30-12:00 PM	**Flight test results of Observer/Kalman Filter Identification of the Pegasus unmanned vehicle** T.D. Woodbury; J. Valasek; F. Arthurs
9:30 AM-12:30 PM, Tallahassee 1, **AMT-05. Aerodynamic Diagnostics Tool for High Speed Flows**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Justin Wagner, Sandia National Laboratories; Co-Chair: Sohail Zaidi, Agilent Technologies	
9:30-10:00 AM	**Gas-Phase Temperature Measurements at the Exhaust of a J85 Engine using Coherent Anti-Stokes Raman Scattering** A. Alexander; P. Hsu; J.A. Wehrmeyer; S. Roy; J.R. Gord; J. Kriesel
10:00-10:30 AM	**Laser Doppler Velocimetry in Supersonic Round Jets** A.M. Karns; R.W. Powers; D.K. McLaughlin
10:30-11:00 AM	**Krypton Tagging Velocimetry for Use in High-Speed Ground-Test Facilities** N.J. Parziale; M. Smith; E.C. Marineau
11:00-11:30 AM	**Method for spectra estimation from high-speed experimental data at discrete points in time** A. Schreyer; L. Larchevêque; P. Dupont
11:30-12:00 PM	**Application of Focusing Schlieren Deflectometry to an Isolator Shock Train** J.S. Geerts; K.H. Yu

9:30 AM-12:30 PM, Naples 1, **APA-30. Aerodynamic Design: Analysis, Methodologies & Optimization Techniques III**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Anton Vanderwyst, Raytheon Missile Systems; Co-Chair: Travis Douville, TLG Aerospace, LLC.	
9:30-10:00 AM	**Optimization of MVG Position for Control of Shock Boundary Layer Interaction** C. Liu; Y. Yang; Y. Yan
10:00-10:30 AM	**Using Mesh Adjoint for Shock Bump Deployment and Optimisation on Transonic Wings** F. Zhu; N. Qin
10:30-11:00 AM	**Multi-Winglets: Multi-Objective Optimization of Aerodynamic Shapes** S.R. Reddy; G.S. Dulikravich; A. Abdoli; H. Sobieczky
11:00-11:30 AM	**Effect of surface morphing on the wake structure and performance of pitching-rotating plates** Y. Ren; H. Dong
9:30 AM-12:30 PM, Naples 2, **APA-31. Propeller/Rotorcraft/Wind Turbine Aerodynamics II**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Mark Calvert, U.S. Army AMRDEC; Co-Chair: Jonathan Murray, Sandia National Laboratories	
9:30-10:00 AM	**Fully Implicit Discrete Adjoint Methods** M. Biava; M. Woodgate; G.N. Barakos
10:00-10:30 AM	**Tip Vortex Dynamics of a Pitching Rotor Blade Tip Model** C. Wolf; C. Merz; K. Richter; M. Raffel
10:30-11:00 AM	**An Experimental Study of the Effects of Winglets and Serrations on the Wake of a Wind Turbine** V. Klimchenko; A.R. Jones
11:00-11:30 AM	**Characterization of blade throw from a 2.3MW horizontal axis wind turbine upon failure** H.S. Chivaee; J.N. Sørensen
11:30-12:00 PM	**A Damage Assessment for Wind Turbine Blades from Heavy Atmospheric Particles** G. Fiore; G.E. Camarinha Fujiwara; M.S. Selig
9:30 AM-12:30 PM, Destin 1, **APA-32. Applied CFD & Numerical Correlations with Experimental Data II**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Edward Feltrop, The Cessna Aircraft Company; Co-Chair: David O'Brien, US Army RDECOM	
9:30-10:00 AM	**Detached Eddy Simulation for the F-16XL Aircraft Configuration** A.A. Elmiligui; K.S. Abdol-Hamid; E. Parlette
10:00-10:30 AM	**Numerical Study of Ditching Characteristics of a Transport Aircraft by Global Moving Mesh** Q. Qu; M. Hu; H. Guo; P. Liu; R.K. Agarwal
10:30-11:00 AM	**Effect of Tail Dihedral Angle on Lateral Directional Stability due to Sideslip Angles** N.B. Musa; S. Mansor; A. Ali; M. Che Man
11:00-11:30 AM	**Numerical Simulation of the Flowfield around Airfoil with Spoiler using the Higher Order Spectral Difference Method** M.A. Alhawwary; F.M. Owis; M.M. Abdelrahman

11:30-12:00 PM	**Integrated Aerodynamic Benefits of Distributed Propulsion** A.T. Wick; J.R. Hooker; C.H. Zeune
9:30 AM-12:30 PM, Sun Ballroom A, **APA-33. High-Angle-of-Attack & High-lift Aerodynamics**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Anthony Sclafani, Boeing Engineering Operations & Technology; Co-Chair: Joao Luiz Azevedo,	
9:30-10:00 AM	**Time-Resolved Measurements of Cellular Separation on a Stalling Airfoil** K.J. Disotell; J. Gregory
10:00-10:30 AM	**Geometrically-Exact Extension of Theodorsen's Frequency Response Model** H.E. Taha; Z. Yan; M.R. Hajj
10:30-11:00 AM	**Experimnetal Investigations of the Lift Frequency Response at High Angels of Attack** M.Y. Zakaria; H.E. Taha; M.R. Hajj
9:30 AM-12:30 PM, Destin 2, **APA-34. Special Session: CREATE-AV High Performance Computing Multiphysics Applications of Full-up Air Vehicles IV**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Nathan Hariharan, CREATE-AV; Co-Chair: James Forsythe,	
9:30-10:00 AM	**Static and Dynamic CFD Analysis of a Generic Swept Wing UCAV** E. Lynch; A.R. Crowell; J.M. Lee
10:00-10:30 AM	**Investigation of Aeroelastic Flow Control of a Fluttering Wing with HPCMP CREATE™-AV Kestrel** C.P. Fagley; J. Seidel; T.E. McLaughlin
10:30-11:00 AM	**A Flight Simulator for Agile Fighter Aircraft and Nonlinear Aerodynamics** H.A. Carlson; R. Verberg
11:00-11:30 AM	**Ensuring a smooth transition from semi-structured surface boundary layer mesh to fully unstructured anisotropic surface mesh** R. Aubry
11:30-12:00 PM	**CREATE-AV DaVinci 3.0 and Capstone Integration** G.P. Brooks
9:30 AM-12:30 PM, Osceola Ballroom 6, **AS-06. Space Applications**, Technical Paper, **23nd AIAA/AHS Adaptive Structures Conference**, Chair: Gregory Agnes, Jet Propulsion Laboratory; Co-Chair: Ronald Barrett-Gonzalez, The University of Kansas	
9:30-10:00 AM	**A Morphing Radiator for High-Turndown Thermal Control of Crewed Space Exploration Vehicles** T.J. Cognata; D.J. Hartl; R. Sheth; C. Dinsmore
10:00-10:30 AM	**Analysis of Highly Coupled Thermal-Structural Responses in Morphing Radiative Bodies** C.L. Bertagne; D.J. Hartl; T.J. Cognata
10:30-11:00 AM	**The Spacecraft SHM Experiment, Part 1: Development for Space Flight** D.T. Doyle; S. Lee; J. Stein; S.S. Kessler
11:00-11:30 AM	**LQR Using Second Order Voctor Form for a Membrane with Bimorph Actuators** I. Ferhat; C. Sultan

9:30 AM-12:30 PM, Sun Ballroom D, **DE-03. Wildlife Conservation UAV Challenge (wcUAVc)**, Panel, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference (non-paper sessions)**, Chair: Lisa Saam, ATA Engineering, Inc. (HQ); Co-Chair: Garfield Creary, NASA-Langley Research Center	
9:30 AM-12:00 PM, Emerald 6, **EDU-01. Advancing Aerospace Education I**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Raymond LeBeau, Saint Louis University	
9:30-10:00 AM	**Empowering engineers through structured online learning of CAE** L. Bodnar
10:00-10:30 AM	**Undergraduate Research on Peculiarities of the Combustion of Ecologically Clean Paraffin Wax Fuels in Hybrid Propellant Rocket Engines** V.I. Naoumov; N. Al Masoud; P. Skomin; P. Deptula
10:30-11:00 AM	**A Massive Open Online Course in Aerodynamics** D.L. Darmofal
11:00-11:30 AM	**A Collaborative Conceptual Aircraft Design Environment for the Design of Small-Scale UAVs in a Multi-University Setting** J.S. Becar; S.E. Gorrell; B.T. Newill
11:30-12:00 PM	**Forensic Engineering: Learning by Accident** **Teaching Investigation Skills to Graduate Students using Real-Life Accident Simulations** C. Rans; G. Saunders-Smits; M. Schuurman
9:30 AM-12:30 PM, Daytona 1, **FD-40. Swept and 3D Shock Boundary Layer Interactions**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Jesse Little, The University of Arizona; Co-Chair: Joanna Austin, University of Illinois at Urbana-Champaign	
9:30-10:00 AM	**Shock-Boundary Layer Interaction due to a Sharp Unswept Fin in a Mach 2 Flow** N. Arora; M. Ali; F.S. Alvi
10:00-10:30 AM	**Large Eddy Simulation of A Three-Dimensional Compression Ramp Shock-Turbulent Boundary Layer Interaction** D.M. Dawson; S.K. Lele
10:30-11:00 AM	**Boundary layer separation in a 3D shock train** R. Klomparens; M. Gamba; J.F. Driscoll
11:00-11:30 AM	**Study of Shock-shock interaction for a double wedge configuration using a particle approach** O. Tumuklu; D.A. Levin; S.F. Gimelshein; J.M. Austin
9:30 AM-12:30 PM, Tallahassee 3, **FD-41. Turbulence**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Ephraim Gutmark, University of Cincinnati	
9:30-10:00 AM	**Volumetric Three-Component Measurements of Air Jet Flows of Different Diffuser Designs** R. Wahidi; S.M. Olcmen; W. Lai

10:00-10:30 AM	**Stereoscopic PIV measurements and numerical simulation of turbulent flow of liquid passing through rectangular apertures in a narrow annulus: influence of aperture shape on velocity field** Y. Perelstein; E.J. Gutmark
10:30-11:00 AM	**Numerical Simulation of Pressure Recovery and Distortion in an Aircraft Engine Intake Serpentine Diffuser with Vortex Generator Vanes** B. Sasanapuri; K.A. Kurbatskii; S. Kumar
11:00-11:30 AM	**DNS Study on Hairpin Vortex Structure in Turbulence** C. Liu; Y. Yan; H. Al-Dujaly
11:30-12:00 PM	**Noise control of cavity flows for subsonic flows** A. das Gupta; S. Roy
9:30 AM-12:30 PM, Sanibel 3, **FD-42. Turbulence Modeling II**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Reetesh Ranjan, Georgia Institute of Technology; Co-Chair: Upender Kaul, NASA ARC	
9:30-10:00 AM	**Hybrid two-level large-eddy simulation of turbulent flow in a channel, past a bump and around an inclined prolate spheroid** R. Ranjan; S. Menon
10:00-10:30 AM	**Turbulence Modeling for Realistic Computation of Internal Flow in Liquid Ejector Pumps** J. Masud; M. Imran
10:30-11:00 AM	**Modification of Spalart-Allmaras Model for Shock-Wave-Boundary Layer Interaction** L. Ma; L. Lu; J. Fang
9:30 AM-12:30 PM, Sanibel 2, **FD-43. Turbulent Flow Solutions for NACA 0012 and Other Test Cases from the Turbulence Model Resource Website: Residual and Grid Convergence I (Invited)**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: Krzysztof Fidkowski, University of Michigan; Co-Chair: W Kyle Anderson, SimCenter at University of Tennessee at Chattanooga	
9:30-10:00 AM	**High-Order Discontinuous Galerkin Mesh Resolved Turbulent Flow Simulations of a NACA 0012 Airfoil (Invited)** M.J. Brazell; D.J. Mavriplis
10:00-10:30 AM	**Application of a Higher-order Adaptive Method to RANS Test Cases (Invited)** Y. Hu; C. Wagner; S. Allmaras; M. Galbraith; D.L. Darmofal
10:30-11:00 AM	**Benchmark Turbulent Flow Simulations with a RANS High-order CPR Formulation (Invited)** C. Zhou; Z.J. Wang
11:00-11:30 AM	**Finite-Element Solutions for Turbulent Flow over the NACA 0012 Airfoil (Invited)** W. Anderson; J. Newman; L. Wang; S. Kapadia
11:30-12:00 PM	**High-Order Output-Based Adaptive Simulations of Turbulent Flow in Two Dimensions (Invited)** M. Ceze; K. Fidkowski

12:00-12:30 PM	**A comparative study of grid convergence and accuracy for structured, unstructured and adaptive grid discretizations in 2D (Invited)** D.S. Kamenetskiy
9:30 AM-12:30 PM, Sun Ballroom 6, **FD-44. Unsteady Flow III**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Qiqi Wang, MIT; Co-Chair: Andreas Gross, New Mexico State University	
9:30-10:00 AM	**Development of a Navier-Stokes-Based Numerical method for Basic State Perturbation Analysis** S. Bhaumik; D.V. Gaitonde; M. Waindim
10:00-10:30 AM	**Multiple Shooting Shadowing for Sensitivity Analysis of Chaotic Systems and Turbulent fluid flows** P.J. Blonigan; Q. Wang
10:30-11:00 AM	**Afterbody Effects on Axisymmetric Base Flows** V. Gentile; F. Schrijer; B. van Oudheusden; F. Scarano
11:00-11:30 AM	**An Analysis of the Unsteady Wake Behind a Circular Cylinder using Lagrangian Coherent Structures** M. Rockwood; M.A. Green
11:30-12:00 PM	**Eulerian and Lagrangian Methods for Detecting Vortex Formation and Shedding** Y. Huang; M.A. Green
9:30 AM-12:30 PM, Sun Ballroom C, **GEPC-03. NASA Transformational Tools and Technologies (T3) Project Recent Modeling Advances**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Daniel Williams, NASA Langley Research Center; Co-Chair: Michael Rogers, NASA Ames Research Center	
9:30-10:00 AM	**NASA T3 Project and Modeling Vision** J.D. Heidmann; D.M. Williams; M.M. Rogers
10:00-10:30 AM	**Test Cases for NASA's Revolutionary Computational Aerosciences Technical Challenge (Invited)** C.L. Rumsey; J.R. DeBonis; M.R. Malik
10:30-11:00 AM	**Recent Developments in FUN3D: Entropy Stable DG-FEM** M.H. Carpenter; E.J. Nielsen; M. Parsani
11:00-11:30 AM	**NASA's Modelling and Simulation Tools for Liquid-Fueled Turbulent Combustion** N. Liu; C.T. Wey
11:30-12:00 PM	**NASA's Aeroacoustic Tools and Methods for Analysis of Aircraft Noise** S.A. Rizzi; L.V. Lopes; C.L. Burley
12:00-12:30 PM	**Advances in Methods for Solving Large Scale Design Problems Using Automatic Multidisciplinary Derivatives with NASA's OpenMDAO** J.S. Gray
9:30 AM-12:30 PM, Miami 1, **GNC-30. Advances in UAS Technologies II**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Co-Chair: Florian Holzapfel, Technische Universität München; Chair: Naira Hovakimyan, University of Illinois at Urbana-Champaign	

9:30-10:00 AM	**Aerodynamic Parameter Identification and Uncertainty Quantification for Small Unmanned Aircraft** L.E. Hale; M. Patil; C.J. Roy
10:00-10:30 AM	**Open-Loop Quadrotor Flight Dynamics Identification in Frequency Domain via Closed-Loop Flight Testing** P. Niermeyer; T. Raffler; F. Holzapfel
10:30-11:00 AM	**Herding a Flock of Birds Approaching an Airport Using an Unmanned Aerial Vehicle** S. Gade; A.A. Paranjape; S. Chung
11:00-11:30 AM	**Verified Planar Formation Control Algorithms by Composition of Primitives** L. Bobadilla; T.T. Johnson; A. LaViers
9:30 AM-12:30 PM, Sun Ballroom 3, **GNC-31. Loss of Control Mitigation and Recovery**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Chair: Fabio Almeida, Instituto de Aeronáutica e Espaço; Co-Chair: Praveen Shankar, California State Univ	
9:30-10:00 AM	**Nonlinear Smooth Trackers with Control Rates Constraints for Aeronautical Vehicles Loss-Of-Control Autonomous Recovery** J. Dongmo
10:00-10:30 AM	**Loss-Of-Control Autonomous Flight Recovery Regimes using Feedback Linearization and High Order Sliding Mode Control with Exponential Observers** J. Dongmo
10:30-11:00 AM	**Preliminary Evaluation of the SAFE-Cue Warning Display for Loss of Control Mitigation** A.K. Lampton; D.H. Klyde; D. Lee; P.C. Schulze; B. Cogan
11:00-11:30 AM	**Recovery of an Aircraft from the Loss of Control Using Open Final Time Dynamic Optimization and Receding Horizon Control** G. Garcia; S. Keshmiri; W. Huang
11:30-12:00 PM	**Piloted Simulator Evaluation of Maneuvering Envelope Information for Flight Crew Awareness** T. Lombaerts; S. Schuet; D.M. Acosta; J. Kaneshige; K.H. Shish
9:30 AM-10:30 AM, Sun Ballroom 4, **GNC-32. Guidance, Navigation and Control Concepts in Air Traffic Control Systems II**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Co-Chair: Animesh Chakravarthy, Wichita State University; Co-Chair: Xiaoli Bai	
9:30-10:00 AM	**Remote Detection of Turbulence via ADS-B** J.A. Krozel; R. Sharman
10:00-10:30 AM	**Detecting Convective Induced Turbulence via Total Lightning Sensing** J.A. Krozel; W. Deierling; R. Sharman; J.K. Williams
9:30 AM-12:30 PM, Sun Ballroom 4, **Mini/Micro Air Vehicle GNC I**	
9:30-10:30 AM	**No Presentations**

10:30-11:00 AM	**Experimental Measurements of Cycle Averaged Forces for a Flapping Wing Vehicle** M.W. Oppenheimer; I. Weintraub; D. Sigthorsson; D.B. Doman
11:00-11:30 AM	**Effect of Wing Flexibility and Motor Dynamics on Split-Cycle Control of Flapping Wing Vehicles** S. Nogar; A. Serrani; A. Gogulapati; J.J. McNamara
11:30-12:00 PM	**Roll Stability Regimes at Low Reynolds Numbers** M.C. Shields; K. Mohseni
12:00-12:30 PM	**A Geometric Control Approach for the Longitudinal Flight Stability of Hovering Insects/FWMAVs** H.E. Taha
9:30 AM-12:30 PM, Sun Ballroom 5, **GNC-34. Spacecraft Guidance, Navigation, and Control IV**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Co-Chair: Daniel Alazard, Institut Supérieur de l'Aéronautique et de l'Espace	
9:30-10:00 AM	**Distributed Consensus-Based Kalman Filter Estimation and Control of Formation Flying Spacecraft: Simulation and Validation** T.T. Vu; A.R. Rahmani
10:00-10:30 AM	**Evolutionary Optimization of Satellite Formation Topology Over a Region of Interest** D. Hinckley; D.L. Hitt; M. Eppstein
10:30-11:00 AM	**Nonlinear Control to Maneuver a Two-Craft Coulomb Formation at Libration Points** M.M. Gomroki; O. Tekinalp
11:00-11:30 AM	**The Results of the AOCS Solutions and Technologies study for the Next Generation Gravity Mission** A. Bacchetta; M. Buonocore; S. Cesare; S. Dionisio; M. Parisch; E. Canuto; B. Girouart; L. Massotti
9:30 AM-12:30 PM, Sanibel 1, **GT-05. High Reynolds Number Aerodynamics and Testing (Invited)**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: William Kilgore, NASA Langley Research Center; Co-Chair: Jürgen Quest, ETW GmbH	
9:30-10:00 AM	**Influences of Models on the Unsteady Pressure Characteristics of the NASA National Transonic Facility** G.S. Jones; S. Balakrishna; J.A. DeMoss; S. Goodliff
10:00-10:30 AM	**Combination of Temperature Sensitive Paint and Carbon Nanotubes for Transition Detection** C. Klein; U. Henne
10:30-11:00 AM	**Overview about the HINVA A320 High Lift Flight Reynolds Number Test Campaign** R. Rudnik
11:00-11:30 AM	**Tracking the Nacelle Vortex above Aircraft Wing in the ETW at Real Mach- and Reynolds Numbers by Means of PIV** R. Konrath
11:30-12:00 PM	**Facility Improvement and Data Optimization (FIDO) Efforts at the NASA NTF** R.W. Paryz; E. Walker

12:00-12:30 PM	**Testing of Laminar Wings at High Reynolds Numbers** W. Kühn
9:30 AM-12:30 PM, Miami 3, **GT-06. Unique or Innovative Uses of Existing GTF and Support Systems**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Victor Canacci, Jacobs Technology	
9:30-10:00 AM	**Wind Tunnel Test On The Breakthrough Laminar Aircraft Demonstrator Europe In The DNW-LLF** I. Philipsen; J. Postma; K. Artois
10:00-10:30 AM	**Errors in Off-axis Loading of Off-the-shelf 6-Component Force Transducers: A Cautionary Tale** S. Gunasekaran; A. Altman; M.V. Ol
10:30-11:00 AM	**Development and Experimental Validation of a Dynamic Model for Wind-Tunnel Heat Exchangers** P. Sutcliffe; M.R. Rennie; E.J. Jumper
11:00-11:30 AM	**An Experimental Four-Component Optical Fibre Balance** F.F. Pieterse
11:30-12:00 PM	**Effects of Low Subsonic Wind Tunnel Model Hardware Surface Treatments on Drag** A. Holup; N.S. Templon; B.T. Buerge
9:30 AM-12:30 PM, Emerald 1, **GTE-07. Gas Turbine Combustion III**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Jason Smith, GE Aviation	
9:30-10:00 AM	**Experimental Studies and Modeling of Acoustic Instabilities in a Gas Turbine Model Combustor** Y. Chen; J.F. Driscoll
10:00-10:30 AM	**A Finite-Volume Time-Domain Solver for Estimation of Combustion Instabilities** A. Jemcov; E. Gonzalez
10:30-11:00 AM	**Numerical Investigation of Flame Shape Control by Dielectric Barrier Discharge Actuators** C. Wang; H. Tsao
11:00-11:30 AM	**Effects of Physical Modeling on Combustion Instability Predictions in a Single-Element Lean Direct Injection Gas Turbine Combustor** C. Huang; R.M. Gejji; W.E. Anderson
11:30-12:00 PM	**Turbulent Premixed Flame Ignition and Stabilization Using a Detonation Wave** W. Haw; P. King; B.A. Rankin; J. Hoke; F. Schauer
9:30 AM-12:30 PM, Osceola Ballroom 3, **IS-10. Big Data & Analytics in Aerospace** , Technical Paper, **AIAA Infotech @ Aerospace**, Chair: Ashok Srivastava, NASA Ames Research Center; Co-Chair: Nikunj Oza, NASA-Ames	
9:30-10:00 AM	**Visual Analytics at Boeing** D.J. Kasik
10:00-10:30 AM	**Multimodality in a Metroplex Environment: A case study in the San Francisco Bay Area** A.C. Marzuoli; E. Feron; M. Hansen; A. Bayen; E. Boidot
10:30-11:00 AM	**Data Mining for Aviation Safety** N. Oza

11:00-11:30 AM	**Role of Big Data, Data Analytics, and Networked Air Traffic Management** P.H. Kopardekar
11:30-12:00 PM	**A Neural Network Approach to Airport Management** O. Milbredt; E. Grunewald
12:00-12:30 PM	**A Jump-Linear Model based Sensitivity Study for Optimal Air Traffic Flow Management under Weather Uncertainty** Y. Zhou; J. Xie; Y. Wan
9:30 AM-12:30 PM, Osceola Ballroom 1, **IS-11. Augmenting Adaptive Algorithms for Aircraft Control II**, Technical Paper, **AIAA Infotech @ Aerospace**, Chair: Nhan Nguyen, NASA-Ames Research Center	
9:30-10:00 AM	**Development of an Adaptive-optimal Multi-Objective Optimization Algorithm** A. Abdollahi; G. Chowdhary
10:00-10:30 AM	**Experimental Results for Adaptive, Optimal Control of a 2-DOF Helicopter** G. Atmeh; K. Subbarao
9:30 AM-12:30 PM, Sarasota 1, **MAT-12. Fatigue & Fracture III**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Gary Seidel, Virginia Polytechnic Institute and State Universit; Co-Chair: Steven Wanthal, The Boeing Company	
9:30-10:00 AM	**In Situ Study of Strain Energy Density at Notch Roots Using Digital Image Correlation** C. Holycross; M. Shen; O.E. Scott-Emuakpor; T. George
10:00-10:30 AM	**A Novel Method for the Manipulation of Damage and In-Situ Repair of Composite T-Joints** J.F. Cullinan; M. Wisnom; I. Bond
10:30-11:00 AM	**Cohesive Laws and Progressive Damage Analysis of Composite Bonded Joints, a Combined Numerical/Experimental Approach** D. Girolamo; C.G. Davila; F.A. Leone; S. Lin
11:00-11:30 AM	**A Phantom Paired Element Based Discrete Crack Network (DCN) Toolkit for Residual Strength Prediction of Laminated Composites** E. Fang; X. Cui; T. Zhang; X. Liu; J. Lua
11:30-12:00 PM	**A Microstructurally-Informed, Continuum-Level Life Prediction Model for Thermo-Acousto-Mechanically Fatigued Ti-6242S and IN617** A. Gordon; A. Owji; T.S. Bouchenot; R.C. Penmetsa
9:30 AM-12:30 PM, Sarasota 2, **MAT-13. Materials Testing & Characterization II**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Donald Jaworske, NASA Glenn Research Center; Co-Chair: Rajiv Naik, Pratt & Whitney	
9:30-10:00 AM	**Ablation, Thermal, and Morphological Properties of SiC Fibers Reinforced Ceramic Matrix Composites** T. Grantham; G. Tanner; R. Molina; N. Duong; J.H. Koo

10:00-10:30 AM	**Strain Sensor Comparison for Improving Experimental Measurement of Hysteresis Energy** O.E. Scott-Emuakpor; B.T. Langley; C.M. Holycross; T. George; B.D. Runyon
10:30-11:00 AM	**Revisiting Mixed Mode Fracture in Laminated Composites Using Edge Delamination Strength Testing** S. Sharma; P. Smith
11:00-11:30 AM	**Design of Small-scale Ablative Testing Apparatus with Sample Position and Velocity Control** L.G. Gutierrez; J. Reyes; S. Scott; A. Sada; J.H. Koo
9:30 AM-12:30 PM, Sarasota 3, **MDO-08. MDO: AeroStructure Design II**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Laura Mainini, Massachusetts Institute of Technology; Co-Chair: Joaquim Martins, University of Michigan	
9:30-10:00 AM	**Adaptive Sub-Space Approximations in Trust-Regions for Large Scale MDO problems** J. Ollar; V. Toropov; R. Jones
10:00-10:30 AM	**Multi-Objective Experimental Optimization with Multiple Simultaneous Sampling for Flapping Wings** A. Chaudhuri; R.T. Haftka; K.T. Chang; J. Van Hall; P. Ifju
10:30-11:00 AM	**Open-Source Conceptual Sizing Models for the Hyperloop Passenger Pod** J.C. Chin; J.S. Gray
9:30 AM-12:30 PM, Sun Ballroom 1, **MST-12. Modeling of Vehicle Dynamics II**, Technical Paper, **AIAA Modeling and Simulation Technologies Conference**, Chair: David Gingras, Bihrle Applied Research Inc.	
9:30-10:00 AM	**Modeling and Control Design for a New Spacecraft Concept for Measuring Particles and Fields with Unprecedented Resolution and Accuracy** Y. Mao; D. Auslander; D. Pankow; K. Vega; F.S. Mozer; P. Turin
10:00-10:30 AM	**Design and Evaluation of a Semi-Empirical Piece-wise Exponential Atmospheric Density Model for CubeSat Applications** S. Kedare; S. Ulrich
10:30-11:00 AM	**Design and Validation of a New Algorithm for the Online Computation of the Earth's Magnetic Field Model** F. Gulmammadov
11:00-11:30 AM	**Modeling of the Longitudinal Dynamics of a Hang Glider** Y. Ochi
11:30-12:00 PM	**Dynamic Response Simulation of Helicopter in Variable Wind Field** T. Liu; Y. Dai; G. Hong
9:30 AM-12:30 PM, Sun Ballroom 2, **MST-13. Model and Simulation Verification and Validation**, Technical Paper, **AIAA Modeling and Simulation Technologies Conference**, Chair: Bruce Jackson, NASA-Langley Research Center	
9:30-10:00 AM	**Verification and Validation Spanning Models to Code** J. Abraham

10:00-10:30 AM	**Full Flight-Envelope Simulation and Piloted Fidelity Assessment of a Business Jet Using a Model Stitching Architecture** E. Tobias; M. Tischler; T. Berger; S.G. Hagerott
10:30-11:00 AM	**Tuning of Airplane Flight Dynamic Model Using Flight Testing** A. Kamal; A.M. Aly; A. Elshabka
11:00-11:30 AM	**Modeling and Simulation of Propeller Propulsion Model Using Wind Tunnel** A. Kamal; A.M. Aly; A. Elshabka
9:30 AM-12:30 PM, Osceola Ballroom 5, **NDA-07. Uncertainty Quantification and Management II**, Technical Paper, **17th AIAA Non-Deterministic Approaches Conference**, Chair: Jeroen Witteveen, Center for Mathematics and Computer Science (CWI); Co-Chair: Vicente Romero, Sandia National Laboratories	
9:30-10:00 AM	**Towards Characterizing the Variability in the Loading Demands of an Unmanned Aerial Vehicle** S. Sankararaman; K. Goebel
10:00-10:30 AM	**Uncertainty Quantification of Composite Structures with Defects using Multilevel Monte Carlo Simulations** R. Butler; T.J. Dodwell; R.T. Haftka; N. Kim; T. Kim; S. Kynaston; R. Scheichl
10:30-11:00 AM	**Designing Simulation Platforms For Uncertainty—an Example from an Aerospace Supplier** A. Forslund; C. Levandowski; R. Söderberg; J. Lööf; S. Knuts; O. Isaksson; P. Andersson; D.D. Frey
11:00-11:30 AM	**Investigating Model Uncertainty in the Nonlinear Aeroelastic Response of Thin Panels** R.A. Perez; B.P. Smarslok; J.J. McNamara
9:30 AM-11:30 AM, Osceola Ballroom B, **PANEL-07. Aerospace Vehicles Technology Trends**, Panel, **Forum 360**	
9:30 AM-12:30 PM, Emerald 3, **PC-17. Detonations, Explosions, and Supersonic Combustion I**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: Christopher Brophy, Naval Postgraduate School; Co-Chair: Edward Lynch, Aerojet Rocketdyne	
9:30-10:00 AM	**Plasma-Assisted PDE and Deflagration-to-Detonation Transition** A. Starikovskiy
10:00-10:30 AM	**Physics of Heat-Release in Rotating Detonation Engines** D.A. Schwer; K. Kailasanath
10:30-11:00 AM	**Experimental Characterization of High-Frequency Heat Flux in a Rotating Detonation Engine** S.W. Theuerkauf; F. Schauer; R. Anthony; J. Hoke
11:00-11:30 AM	**Imaging of OH* Chemiluminescence in an Optically Accessible Nonpremixed Rotating Detonation Engine** B.A. Rankin; D.R. Richardson; A.W. Caswell; A. Naples; J. Hoke; F. Schauer

9:30 AM-12:30 PM, Emerald 7, **PC-18. Rocket and Air-Breathing Combustion I,** Technical Paper, **53rd AIAA Aerospace Sciences Meeting,** Co-Chair: Millicent Coil, Orbital Technologies Corporation; Co-Chair: Thong Nguyen, Aerojet Rocketdyne	
9:30-10:00 AM	**Study of Liquid Breakup Processes in Solid Rocket Motors** R.S. Amano; Y. Yen; T. Miller; A. Ebnit; M. Lightfoot; V. Sankaran
10:00-10:30 AM	**Eigenvalue Analysis for the Prediction of Initial Growth Rates of Thermoacoustic Instability in Rocket Motors** M. Schulze; T. Sattelmayer
10:30-11:00 AM	**The Response of Cryogenic H2/O2 Coaxial Jet Flames to Acoustic Disturbances** D.J. Forliti; A. Badakhshan; J. Wegener; I.A. Leyva; D.G. Talley
11:00-11:30 AM	**Comparison of a Structured-LES and an Unstructured-DES Code for Predicting Combustion Instabilities in a Longitudinal Mode Rocket Combustor** M.E. Harvazinski; D.G. Talley; V. Sankaran
11:30-12:00 PM	**Investigation of Instability Mechanisms in a Laboratory Scale GH2/GO2 Combustor** L.W. White; A. Dasari; M. Gamba
12:00-12:30 PM	**Boundary conditions treatment for supercritical flows with tabulated thermochemistry** G. Ribert; X. Petit; P. Domingo; N. Vallée
9:30 AM-12:30 PM, Emerald 5, **PDL-07. Plasma & Laser Propulsion,** Technical Paper, **53rd AIAA Aerospace Sciences Meeting,** Co-Chair: George Williams, Ohio Aerospace Institute; Co-Chair: Ron Litchford, NASA	
9:30-10:00 AM	**W-Band Free-Space Dielectric Material Property Measurement Techniques for Beamed Energy Applications** M.S. Hilario; B. Hoff; M. Young
10:00-10:30 AM	**Analyses of Ignition Processes of an Applied-Field Magnetoplasmadynamic Thruster** M. Kong; H. Tang; W. Yang; Y. Xu; B. Wang
10:30-11:00 AM	**Thrust Measurement of Radio Frequency Inductively Coupled Plasma Thruster** T. Kato; Y. Iwasaki; T. Fujino; I. Funaki
11:00-11:30 AM	**Numerical and Experimental Investigation of Nanosecond-Pulsed Plasma Activated C_2H_4/O_2/Ar Mixtures in a Low Temperature Flow Reactor** S. Yang; S. Nagaraja; V. Yang; W. Sun; J.K. Lefkowitz; Y. Ju
11:30-12:00 PM	**A Detailed Comparison of Thermal and Nanosecond Plasma Assisted Ignition of Hydrogen-Air Mixtures** S. Yang; S. Nagaraja; W. Sun; V. Yang
9:30 AM-12:30 PM, Emerald 8, **PDL-08. Computational Methods,** Technical Paper, **53rd AIAA Aerospace Sciences Meeting,** Chair: Subrata Roy, University of Florida	
9:30-10:00 AM	**Discontinuous Galerkin Method for Solving Magnetohydrodynamic Equations** A. das Gupta; S. Roy

10:00-10:30 AM	**Master Equation Modeling of Nanosecond Pulse Discharge in Nitrogen in a Pin-to-Pin Geometry** Z. Eckert; I.V. Adamovich
10:30-11:00 AM	**Influence of the Artificial Permittivity on Particle-In-Cell Simulation Method** M. Li; H. Tang; J. Ren
11:00-11:30 AM	**Numerical Investigations of Cathode Surface Streamer Discharges for High-Pressure Large Gap Arc Breakdown** A. Sharma; L.L. Raja
9:30 AM-12:30 PM, Captiva 2, **SATS-02. Small Satellites - Missions,** Technical Paper, **53rd AIAA Aerospace Sciences Meeting,** Chair: Andrew Santangelo; Co-Chair: Jeremy Straub, University of North Dakota	
9:30-10:00 AM	**Flight of FRNCS-P and QuickSAT/Xen on the SHARC CubeSat Mission** A.D. Santangelo
10:00-10:30 AM	**Three-Dimensional Numerical Study of Linear Plug Micronozzles** J. Pearl; W.F. Louisos; D.L. Hitt
10:30-11:00 AM	**Employing Disruptive Business Practices In Space: Closing The Business Case For Commercial Remote Earth and Space Weather Sensing Using Micro-Satellite Constellations** W.A. Hosack
11:00-11:30 AM	**Electric Propulsion Optimization of Microsatellite Moon Missions Preliminary Design Application on CubeSats** O. Kara
11:30-12:00 PM	**A Review of Impending Small Satellite Formation Flying Missions** S. Bandyopadhyay; G.P. Subramanian; R. Foust; D. Morgan; S. Chung; F. Hadaegh
12:00-12:30 PM	**In Search of Standards for the Operation of Small Satellites** J. Straub
9:30 AM-12:30 PM, Osceola Ballroom 4, **SCS-08. Inflatable Space Structures,** Technical Paper, **2nd AIAA Spacecraft Structures Conference,** Chair: Houfei Fang, ; Co-Chair: Jonathan Hinkle, ILC Dover	
9:30-10:00 AM	**Creep Burst Testing of a Woven Inflatable Module** M.M. Selig; G. Valle; G.H. James; O. Oliveras; T.C. Jones; W. Doggett
10:00-10:30 AM	**Analysis of Accelerometer Data from a Woven Inflatable Creep Burst Test** G.H. James
10:30-11:00 AM	**Functional and Qualification Testing of the InflateSail Technology Demonstrator** A. Viquerat; M. Schenk; V. Lappas; B. Sanders
11:00-11:30 AM	**Analysis and Damage Sensitivity of Design Pathfinder for Inflatable Systems** J. Fulcher; S.W. Smith; J.R. Baker

9:30 AM-12:30 PM, Tampa 2, **SD-14. Supersonic/Hypersonic Systems II**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Co-Chair: Nathan Falkiewicz, MIT Lincoln Laboratory; Chair: Kenneth Griffin, Southwest Research Institute	
9:30-10:00 AM	**Effects of Strain Hardening on Fluid-Thermal-Structural Interactions** J. LaFontaine; A. Gogulapati; B.A. Miller; J.J. McNamara
10:00-10:30 AM	**Panel Response Prediction Through Reduced Order Models with Application to Hypersonic Aircraft** M.P. Mignolet; A.J. Culler; J.J. McNamara; A. Matney; S.M. Spottswood
10:30-11:00 AM	**Fluid-Thermal-Structural Interaction Effects in Preliminary Design of High Speed Vehicles** Z. Witeof; C.L. Pasiliao
11:00-11:30 AM	**Investigation into Parallel Time Marching of Fluid-Thermal-Structural Interactions** M. LeVett; Z. Liang; B.A. Miller; J.J. McNamara
11:30-12:00 PM	**Aeroservoelastic Response of A Typical Lifting Type Reentry Vehicle Under Closed Loop Control** A. Joshi; P.M. Mujumdar; G.R. Chary
9:30 AM-12:30 PM, Tampa 3, **SD-15. Active and Passive Damping Systems**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Seetha Raghavan, University of Central Florida; Co-Chair: Salvatore Liguore, Boeing Engineering Operations & Technology	
9:30-10:00 AM	**A Hybrid Magnetostrictive Propellant Management Device for Active Slosh Damping in Spacecraft** B. Sivasubramanian; L.V. Paul; S. Krishnappa; S.N. Gangadharan; D. Kim
10:00-10:30 AM	**Passive Damping of Fuel Slosh using a Suspended Pendulum** L.V. Paul; B. Sivasubramanian; J.M. Pinto; S.N. Gangadharan
10:30-11:00 AM	**Energy Dissipation in a Riveted Lap Joint of Aircraft Structure under In-plane Tensile and Shear Loading** J. Nishimuro; S. Suzuki; S. Machida; T. Okada
11:00-11:30 AM	**Investigation of Analytical Modeling for Structural Damping Properties in Riveted Lap Joints** S. Machida
11:30-12:00 PM	**Suppression of Aeroelastic Instability Due to Freeplay Nonlinearity by a Nonlinear Energy Sink** H. Chen; Y.S. Lee
9:30 AM-12:30 PM, Miami 2, **SE-01. Systems Engineering I**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: John Eiler, Stellar Solutions, Inc.; Co-Chair: David Dress, NASA Langley Research Center	
9:30-10:00 AM	**Extending Model Based Systems Engineering for Complex Systems** M.O. French
10:00-10:30 AM	**A concept of forecasting origin-destination air passenger demand between global city pairs using future socio-economic scenarios** I. Terekhov; V. Gollnick

10:30-11:00 AM	**Replacing Capabilities within a System-of-Systems: An Architectural Study on how to Simplify the National Airspace System** M.W. Levert; T.R. Ender
11:00-11:30 AM	**Future Passenger Air Traffic Modelling: Trend Analysis of the Passenger Air Travel Demand Network** R. Ghosh; I. Terekhov
11:30-12:00 PM	**Threat Plane Method for Developing Operational Rules of an Autonomous Anti-Air Defense System on a Warship against Multiple Attacking Missiles** S. Lee; J. Ahn
9:30 AM-12:30 PM, Osceola Ballroom 2, **SOF-01. Software Challenges in Aerospace Workshop I**, Technical Paper, **AIAA Infotech @ Aerospace**, Chair: Karen Feigh, Georgia Institute of Technology; Co-Chair: Misty Davies, NASA-Ames; Co-Chair: James Murphy, NASA Ames Research Center; Co-Chair: Stephen Blanchette, Software Engineering Institute	
9:30-10:00 AM	**Slayer of Giants** S. Blanchette
10:00-10:30 AM	**Using Formal Requirements and Model-Checking for Verification and Validation of an Unmanned Rotorcraft** C. Torens; F. Adolf
10:30-11:00 AM	**Seeking Meaningful Measures For COTS-Intensive System Development** L.J. Esker; M. Diep; F. Herman
11:00-11:30 AM	**Message Latency Characterization of a Distributed Live, Virtual, Constructive Simulation Environment** J.R. Murphy; S. Jovic; N. Otto
11:30-12:00 PM	**RUMS - Realtime Visualization and Evaluation of Live, Virtual, Constructive Simulation Data** G. Soler; S. Jovic; J.R. Murphy
9:30 AM-12:30 PM, Daytona 2, **SRE-02. ISRU for Mars and Beyond**, Technical Paper, **8th Symposium on Space Resource Utilization**, Chair: Julie Kleinhenz, NASA Glenn Research Center	
9:30-10:00 AM	**Quantification of plume-soil interaction and excavation due to the Mars Science Laboratory Sky Crane Descent Phase** J. Vizcaino; M. Mehta
10:00-10:30 AM	**Capability and Technology Performance Goals for the Next Step in Affordable Human Exploration of Space** D.L. Linne; G. Sanders; K. Taminger
10:30-11:00 AM	**Integrated Systems Logistics in CIS-Lunar Space** **for 8th Space Resource Utilization Conference** D.C. McAlister
11:00-11:30 AM	**In-Space Propulsion, Logistics Reduction, and Evaluation of Steam Reformer Kinetics:** **Problems and Prospects** D.A. Jaworske; B.A. Palaszewski; M.J. Kulis; S.A. Gokoglu
11:30-12:00 PM	**Feasibility of high speed atmospheric flight on Venus** A. Ingenito; A. Agresta; R. Andriani; F. Gamma

12:00-12:30 PM	**Solar System Exploration Augmented by In-Situ Resource Utilization: Human Mercury and Saturn Exploration** B.A. Palaszewski
9:30 AM-12:30 PM, Tallahassee 2, **TES-02. Clean and Alternative Fuels**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Nicholas Syred, Cardiff University	
9:30-10:00 AM	**Preliminary Results from a High Pressure Optical gas Turbine Combustor Model with 3D Viewing Capability** N. Syred; S.M. Morris; P. Bowen; A. Valera-Medina; R. Marsh
9:30 AM-12:30 PM, Sun Ballroom B, **TP-08. DSMC and Non-Continuum Flows**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: David Goldstein, University of Texas; Chair: Jonathan Burt, Universal Technology Corporation	
9:30-10:00 AM	**Coupled Rotational-Vibrational Excitation in Shock Waves using Trajectory-based Direct Simulation Monte Carlo** M.S. Grover; P. Valentini; T.E. Schwartzentruber
10:00-10:30 AM	**Effect of Injector Position on the Mixing Performance in Micro/Nanomixers** M. Darbandi; M. Sabouri; G.E. Schneider
10:30-11:00 AM	**Computation of Rarefied Hypersonic Flows Using a Modified Form of the Conventional Burnett Equations** W. Zhou; W. Chen; R.K. Agarwal
11:00-11:30 AM	**Near Continuum Gas Flows** C. Cai
9:30 AM-12:30 PM, Emerald 4, **WE-13. Wind Energy Innovative Concepts**, Technical Paper, **33rd Wind Energy Symposium**, Chair: Hui Hu, Iowa State University; Co-Chair: Eric Loth, University of Virginia	
9:30-10:00 AM	**Downwind Pre-Aligned Rotor for a 13.2 MW Wind Turbine** E. Loth; B. Ichter; A. Steele; M.S. Selig; P.J. Moriarty
10:00-10:30 AM	**Airfoil with morphing trailing edge for load reduction in wind turbines** T. Wolff; J. Seume
10:30-11:00 AM	**A Comparative Study on the Aeromechanic Performances of a Twin-Rotor Wind Turbine and a Single-Rotor Wind Turbine** H. Hu; Z. Wang; A. Ozbay; W. Tian; A. Sharma
11:00-11:30 AM	**Experiments on Fairing Design for a Wind Turbine Tower** K. O'Connor; E. Loth; M.S. Selig
11:30-12:00 PM	**Numerical Investigation of Aerodynamic Performance and Loads of a Novel Dual Rotor Wind Turbine** A. Rosenberg; B. Moghadassian; A. Sharma; H. Hu
12:00 PM-2:00 PM, Osceola Ballroom CD, **LUNCH-04. Recognition Luncheon: Celebrating Achievements in Aerospace Design/Structures and Literary Excellence**, Lunch, **Forum**	
2:00 PM-5:30 PM, Emerald 2, **ABPSI-02. Inlets and Nozzles**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: Anne-Laure Delot, ONERA; Co-Chair: Stefanie Hirt, NASA Glenn Research Center	

2:00-2:30 PM	**The Design and Performance Evaluation of Hypersonic Inlets for Scramjet Applications** F. Ferguson; M. Dhanasar; T. Lawrence; I.M. Blankson
2:30-3:00 PM	**Benefits of Boundary Layer Ingestion Propulsion** K.M. Sabo; M. Drela
3:00-3:30 PM	**Pressure Based Comparison of Different Gas Turbine Ground Vortex Flows** J.M. Barata; P.A. Manquinho; A.R. Silva
3:30-4:00 PM	**Intake and Airframe Characterization through Composite CFD** J. Masud; O. Khan; S.M. Hassan
4:00-4:30 PM	**Effect of Geometry on Exit Temperature from Serpentine Exhaust Nozzles** D.S. Crowe; C.L. Martin
4:30-5:00 PM	**Performance Evaluation of Airframe-Integrated Aerospike Propulsion Systems in Off-Design Flight Conditions** H. Takahashi; T. Tomita; S. Tomioka
2:00 PM-5:30 PM, Emerald 8, **ACD-05. Propulsion Integration for Aircraft Design**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Ed DiGirolamo, Lockheed Martin Aeronautics	
2:00-2:30 PM	**Integrated Propeller-Wing Design Exploration for Distributed Propulsion Concepts** N.K. Borer; M.D. Moore
2:30-3:00 PM	**Simplified Aerodynamics Models to Predict the Effects of Upstream Propellers on Wing Lift** M.D. Patterson; M.J. Daskilewicz; B. German
3:00-3:30 PM	**Flight Path and Wing Optimization of Lithium-Air Battery Powered Passenger Aircraft** J.M. Vegh; J.J. Alonso; T.H. Orra; C. Ilario da Silva
3:30-4:00 PM	**Study of Electric Aircraft Recharged by Beamed Microwave Power** Y. Ozawa; N. Tanaka; H. Hakojima
4:00-4:30 PM	**Modeling of Electric Motor Driven Propellers for Conceptual Aircraft Design** R.A. McDonald
4:30-5:00 PM	**Multi-Disciplinary Impact of Engine Parameters Upon Transport Aircraft Climb Fuel Consumption** T.T. Takahashi; C.E. Gedeon
5:00-5:30 PM	**Numerical Research on Aerodynamic Efficiency of a VTOL GFS UAV** Y. Zhang; L. Xu; H. Chen
2:00 PM-5:30 PM, Osceola Ballroom 3, **ACD-06. Aircraft Design Methodology**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Cees Bil, RMIT University	
2:00-2:30 PM	**Semi-Empirical Prediction of Aircraft Low-Speed Aerodynamic Characteristics** E.D. Olson
2:30-3:00 PM	**A Practical Method for Uncertainty Analysis in the Aircraft Conceptual Design Phase** S. Van Haver; R. Vos

3:00-3:30 PM	**Alternative Energy Aircraft Range Equations and Resulting Aircraft Design Technology Extrapolation** D.L. Allison; A. Myklebust
3:30-4:00 PM	**Integrating Subsystem Sizing into the More Electric Aircraft Conceptual Design Phase** T. Dendinger; E. Inclan; K. Handschuh; C. Ingram; I. Chakraborty; E. Garcia; D.N. Mavris
4:00-4:30 PM	**Uncertainty Quantification for the Actuation Power Requirements of a Hybrid Wing Body Configuration with Electrically Actuated Flight Control Surfaces** D.C. Garmendia; I. Chakraborty; D.N. Mavris
2:00 PM-5:30 PM, Captiva 1, **AFM-12. MAV, UAV and Aeroservoelastic Vehicles,** Technical Paper, **AIAA Atmospheric Flight Mechanics Conference**, Chair: Kevin Cunningham, NASA Langley Research Center	
2:00-2:30 PM	**The Gust Resistant MAV – Aerodynamic Measurements, Performance Analysis, and Flight Tests** A. Zyluk; K. Sibilski
2:30-3:00 PM	**Experimental Development of a Rotorcraft UAV Downwash Model for Real-Time Disturbance Localization and Avoidance** D. Yeo; E. Shrestha; D.A. Paley; E.M. Atkins
3:00-3:30 PM	**Modal Matching for LPV Model Reduction of Aeroservoelastic Vehicles** J. Theis; B. Takarics; H. Pfifer; G.J. Balas; H. Werner
3:30-4:00 PM	**Longitudinal and Directional Control Modeling for a Small Powered Parafoil Aerial Vehicle** V. Devalla; O. Prakash
4:00-4:30 PM	**Comparative Study of Wing's Motion Patterns on Various Types of Insects on Resemblant Flight Stages** F.P. Neves; J.M. Barata; P.A. Manquinho
4:30-5:00 PM	**A Bio-inspired UAV Leg-Foot Mechanism for Landing, Grasping and Perching Tasks** P. Xie; O. Ma; Z. Zhao; L. Zhang
2:00 PM-5:00 PM, Captiva 2, **AFM-13. Seven Axioms of Good Engineering (Invited Session)**, Panel, **AIAA Atmospheric Flight Mechanics Conference (non-paper sessions)**, Chair: Marilyn Ogburn, NASA Langley Research Center; Co-Chair: Peggy Williams-Hayes, NASA Armstrong Flight Research Center	
2:00 PM-5:30 PM, Sun Ballroom C, **AMT-06/GT-07. Background-Oriented Schlieren: Recent Advancements and Applications in Ground Test Facilities**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: Brett Bathel, NASA Langley Research Center; Co-Chair: Michelle Clem, NASA Glenn Research Center	
2:00-2:30 PM	**Schlieren and Shadowgraphy Developments at NASA Ames Research Center (Invited)** J.T. Heineck; E. Schairer; L.K. Kushner; T.J. Garbeff

2:30-3:00 PM	**Background-Oriented Schlieren Applications in NASA Glenn Research Center's Ground Test Facilities (Invited)** M.M. Clem; M. Woike
3:00-3:30 PM	**Tomographic Background Oriented Schlieren Applications for Turbomachinery (Invited)** U. Hartmann; R. Adamczuk; J. Seume
3:30-4:00 PM	**Development of Background-Oriented Schlieren for NASA Langley Research Center Ground Test Facilities (Invited)** B.F. Bathel; S.E. Borg; E. Walker; T. Mizukaki
4:00-4:30 PM	**Application of Conebeam Tomography to Background-Oriented Schlieren in a Large-Scale Transonic Wind Tunnel (Invited)** K. Scott; J.A. Wehrmeyer
4:30-5:00 PM	**Development of 3D Background Oriented Schlieren Imaging with a Plenoptic Camera (Invited)** B.S. Thurow; A. Bichal
5:00-5:30 PM	**Background-Oriented Schlieren for Large-Scale and High-Speed Aerodynamic Phenomena (Invited)** T. Mizukaki; B.F. Bathel; S.E. Borg; P.M. Danehy; S.M. Murman; T. Matsumura; K. Wakabayashi; Y. Nakayama
2:00 PM-5:30 PM, Tallahassee 1, **AMT-07. Spectroscopy and Schlieren**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: Andrew Cutler, The George Washington University; Co-Chair: Tobias Rossmann, Lafayette College	
2:00-2:30 PM	**The Number Density of Ground State Atomic Oxygen Measurement by High Sensitive Laser Absorption Spectroscopy using Forbidden Line OI 630nm** R. Morita
2:30-3:00 PM	**Development of Combined Dual-Pump Vibrational and Pure-Rotational Coherent Anti-Stokes Raman Scattering (DPVCARS and PRCARS) Systems and their Application to Laminar Counter-flow Flames** A. Satija; S. Yuan; R.P. Lucht
3:00-3:30 PM	**Two-color Polarization Spectroscopy Technique for Probing Collisionally Induced Resonances of Nitric Oxide** A.H. Bhuiyan; A. Satija; S.V. Naik; R.P. Lucht
3:30-4:00 PM	**Pressure Monitoring Using Hybrid fs/ps Rotational CARS** S.P. Kearney; P.M. Danehy
4:00-4:30 PM	**Visualization of a Sweeping Jet by Laser Speckle Retro-reflective Background Oriented Schlieren** L.K. Kushner; J.T. Heineck; B.L. Storms; R. Childs
4:30-5:00 PM	**Institutional Schlieren: A Production-Level Wind Tunnel Test Measurement** T.J. Garbeff; J.T. Heineck; T.K. McDevitt; L.K. Kushner
2:00 PM-5:30 PM, Destin 1, **APA-35. Hypersonic Aerodynamics**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Matthew Conway, The Aerospace Corporation	

2:00-2:30 PM	**Experimental Investigations of Aerodynamic Heating induced by Single and Double Side-jet on a Blunted Cone** M. Taguchi; K. Mori; K. Kitamura; Y. Nakamura
2:30-3:00 PM	**Integration of Optimized Leading Edge Geometries Onto Waverider Configurations** P.E. Rodi
3:00-3:30 PM	**Numerical Simulation of Radiating Re-Entry Flows around Orbital Space Vehicle: Comparison with Observed Data** S. Surzhikov
3:30-4:00 PM	**Sensitivity Analysis of a HIFiRE-6 Design Variant Using Minimum-Resource Statistical Designs** R.E. Graves; S.E. Sherer
4:00-4:30 PM	**Aerodynamic Response Quantification of Complex Hypersonic Configurations using Variable Fidelity Surrogate Modeling** J. Tancred; M.P. Rumpfkeil
4:30-5:00 PM	**Shape Optimization of Axisymmetric Bodies in Hypersonic Flow for Reducing Drag and Heat Transfer** C. Seager; R.K. Agarwal
2:00 PM-5:30 PM, Naples 1, **APA-36. Flow Control Applications & Demonstrations (Active & Passive) III**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Zifeng Yang, Wright State University; Co-Chair: Gecheng Zha, University of Miami	
2:00-2:30 PM	**Numerical and Experimental Wind Tunnel and Flight Testing of Active Flow Control for Modified NACA 643-618 Airfoil** J. Dianics; D. Ohno; S. Fuggmann; J. Lay; D. Heim; H.F. Fasel
2:30-3:00 PM	**Topology of a Trailing Vortex Flow Field with Steady Circulation Control Blowing** A. Edstrand; L.N. Cattafesta
3:00-3:30 PM	**Study on the Vortex Wake of an Airfoil Equipped with Flexible Trailing Edge Fringe** Z. Yang; Z. He; F. Chen
3:30-4:00 PM	**Effect of Piezoelectric Actuated Winglets on the Tip Vortices** T.K. Guha; R. Kumar
4:00-4:30 PM	**Numerical Simulation of Transonic Circulation Control** M. Forster; R. Steijl
4:30-5:00 PM	**Flow Characteristics along an Active Jets Equipped Contour Bump in a Supersonic Freestream and Its Potential to be Applied on Transonic Aircraft for Drag Reduction: An Experimental Study** K. Lo; H. Zare-Behtash; K. Kontis
2:00 PM-5:30 PM, Naples 2, **APA-37. Special Session: Simulation of Rotor in Hover - Rotorcraft DG II**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Nathan Hariharan, CREATE-AV; Co-Chair: T Alan Egolf, Sikorsky Aircraft Corporation	
2:00-2:30 PM	**Comparison of CFD Hover Predictions on the S-76 Rotor** J. Abras; N.S. Hariharan

2:30-3:00 PM	**Hover Performance Predictions for the S-76 Main Rotor Blade** A. Jimenez Garcia; G.N. Barakos
3:00-3:30 PM	**Evaluation of Rotor Hover Performance With Differing Blade Tip Shapes Using Carefree Hybrid Methodologies** T. Ngaya; K. Jacobson; M. Smith; D.A. Wachspress; G.R. Whitehouse
3:30-4:00 PM	**High Order Evaluation of S-76 in Hover** L.N. Sankar; N.S. Hariharan
4:00-4:30 PM	**S-76 Rotor Hover Predictions Using Advanced Turbulence Models** C. Sheng; J. Wang; Q. Zhao
4:30-5:00 PM	**Assessment of Planform Effects on Rotor Hover Performance** L.N. Sankar; R. Marpu; N.S. Hariharan; T. Egolf
2:00 PM-5:30 PM, Destin 2, **APA-38. Special Session: Aerodynamic Design Optimization of Benchmark Cases II**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Joaquim Martins, University of Michigan; Co-Chair: Stephen LeDoux, Boeing Engineering Operations & Technology	
2:00-2:30 PM	**A Study Based on the AIAA Aerodynamic Design Optimization Discussion Group Test Cases** S.T. LeDoux; D.P. Young; S. Fugal; J.K. Elliott; D.S. Kamenetskiy; R.G. Melvin; W.P. Huffman
2:30-3:00 PM	**Aerodynamic Shape Optimization of the Common Research Model Wing-Body-Tail Configuration** S. Chen; Z. Lyu; G.K. Kenway; J. Martins
3:00-3:30 PM	**Aerodynamic Shape Optimization Benchmarks with Error Control and Automatic Parameterization** G.R. Anderson; M. Nemec; M.J. Aftosmis
3:30-4:00 PM	**Direct Search Airfoil Optimization Using Far-Field Drag Decomposition Results** M. Gariepy; J. Trepanier; E. Petro; B. Malouin; C. Audet; S. LeDigabel; C. Tribes
4:00-4:30 PM	**Evolutionary Optimization of Benchmark Aerodynamic Cases using Physics-based Surrogate Models** E. Iuliano
4:30-5:00 PM	**Drag minimization of an isolated airfoil in transonic inviscid flow by means of genetic algorithms** F. Fusi; G. Quaranta; A. Guardone; P.M. Congedo
2:00 PM-5:30 PM, Osceola Ballroom 6, **AS-07. Smart and Multifunctional Materials Applications**, Technical Paper, **23nd AIAA/AHS Adaptive Structures Conference**, Chair: Ratneshwar Jha, Mississippi State University; Co-Chair: Richard Young, NASA-Langley Research Center	
2:00-2:30 PM	**Solid-State Ornithopter: A Feasibility Study** R. Bounthisane; E. Gumapas; F. Hauris; O. Bilgen
2:30-3:00 PM	**Computational Micromechanics Analysis of Damage Induced Piezoresistivity in Carbon Nanotube-Polymer Nanocomposites Under Cyclic Loading Conditions** A.K. Chaurasia; X. Ren; G.D. Seidel

3:00-3:30 PM	**Investigation of Aligned Conductive Polymer Nanocomposites for Actuation of Bistable Laminates** J. Lee; C.J. Brampton; C.R. Bowen; B.L. Wardle; H.A. Kim
3:30-4:00 PM	**Wavelet Spectral Finite Element Based User-Defined Element in ABAQUS for Modeling Delamination in Composite Beams** A. Khalili; D. Samaratunga; R. Jha; G. Srinivasan
4:00-4:30 PM	**Wavelet spectral finite element modeling for wave propagation in adhesively bonded composite joints** D. Samaratunga; R. Jha; G. Srinivasan
4:30-5:00 PM	**Smart washers to measure bolt loads using magnetostrictive Galfenol** G. Raghunath; B. Barkley; A.B. Flatau
5:00-5:30 PM	**Structural Analysis of a Smart Fin Embedded with Single Crystal Piezoelectric Actuators** I. Roh; S. Shin
2:00 PM-5:30 PM, Sun Ballroom A, **FD-45/PDL-09. DBD Plasma Actuators,** Technical Paper, **53rd AIAA Aerospace Sciences Meeting,** Co-Chair: David Ashpis, NASA Glenn Research Center; Co-Chair: Lon Enloe	
2:00-2:30 PM	**Effect of a thin-wire exposed electrode on plasma structure and aerodynamic performance in a DBD plasma actuator** R.S. MANGINA; L.C. Enloe; M. Bliely; R. Cook
2:30-3:00 PM	**An Out-of-Plane Velocity Component in Dielectric Barrier Discharge Actuator Flow** J. Kiser; K.S. Breuer
3:00-3:30 PM	**Examination of a Plasma Actuator Model Applied to DBD Actuators for Small Aircraft Applications** J.B. Laten; R.P. LeBeau
3:30-4:00 PM	**Numerical Study of Three-dimensional Effects of Plasma Structure on Flow Field around DBD Plasma Actuator** H. Nishida; T. Nonomura; T. Abe
2:00 PM-5:30 PM, Sanibel 3, **FD-46. Hypersonic Boundary Layer Transition II,** Technical Paper, **53rd AIAA Aerospace Sciences Meeting,** Chair: Thomas Juliano, University of Notre Dame; Co-Chair: Tim Wadhams, CUBRC	
2:00-2:30 PM	**Boundary Layer Instabilities Generated by Freestream Laser Perturbations** A. Chou; S.P. Schneider
2:30-3:00 PM	**Boundary-Layer Transition Experiments in the Boeing/AFOSR Mach 6 Quiet Tunnel** G. McKiernan; B. Chynoweth; S.P. Schneider
3:00-3:30 PM	**HIFiRE-1 Boundary-Layer Transition: Ground Test Results and Stability Analysis** T.J. Juliano; R.L. Kimmel; S. Willems; A. Guelhan; R. Wagnild
3:30-4:00 PM	**Investigation of Mach 10 Boundary Layer Stability of Sharp Cones at Angle-of-Attack, Part 1: Experiments** E.C. Marineau; G.C. Moraru; D.R. Lewis; J.D. Norris; J.F. Lafferty; H.B. Johnson

4:00-4:30 PM	**Transition Experiments on Blunt Bodies with Distributed Roughness in Hypersonic Free Flight in Carbon Dioxide** M.C. Wilder; D. Reda; D.K. Prabhu
2:00 PM-5:30 PM, Daytona 2, **FD-47. Overset/Deforming/Moving Meshes**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: Karthikeyan Duraisamy, Stanford University; Co-Chair: Dimitri Mavriplis, University of Wyoming	
2:00-2:30 PM	**An Overset Mesh Approach for 3D Mixed Element High Order Discretizations** M.J. Brazell; D.J. Mavriplis; J. Sitaraman
2:30-3:00 PM	**Adjoint-based Adaptation for the Correction Procedure via Reconstruction Method on Hybrid Meshes** L. Shi; Z.J. Wang
3:00-3:30 PM	**Mesh deformation and shock capturing techniques for high-order simulation of unsteady compressible flows on dynamic meshes** A. Sheshadri; J.A. Crabill
3:30-4:00 PM	**A Simple, Efficient, High-Order Accurate Sliding-mesh Interface Approach to FR/CPR Method on Coupled Rotating and Stationary Domains** B. Zhang; C. Liang
4:00-4:30 PM	**High-Order Moving Overlapping Grid Methodology for Aerospace Applications** B. Merrill; Y. Peet
2:00 PM-5:30 PM, Sanibel 2, **FD-48. Turbulent Flow Solutions for NACA 0012 and Other Test Cases from the Turbulence Model Resource Website: Residual and Grid Convergence II (Invited)**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: Boris Diskin, National Institute of Aerospace; Co-Chair: Francisco Palacios, Stanford University	
2:00-2:30 PM	**Performance of a Newton-Krylov-Schur Algorithm for the Numerical Solution of the Steady Reynolds-Averaged Navier-Stokes Equations (Invited)** D.A. Brown; H. Buckley; M. Osusky; D.W. Zingg
2:30-3:00 PM	**RANS simulations on TMR test cases and M6 wing with the Onera elsA flow solver (Invited)** V. Gleize; A. Dumont; J. Mayeur; D. Destarac
3:00-3:30 PM	**Grid Convergence for Turbulent Flows (Invited)** B. Diskin; J. Thomas; C.L. Rumsey; A. Schwoeppe
3:30-4:00 PM	**Improved Convergence and Robustness of USM3D Solutions on Mixed Element Grids (Invited)** M.J. Pandya; B. Diskin; J. Thomas; N.T. Frink
2:00 PM-5:30 PM, Daytona 1, **FD-49. Wing Aerodynamics II**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Kunihiko Taira, Florida State University; Co-Chair: Michael Ol, US Air Force Reseach Laboratory	
2:00-2:30 PM	**A Semi-Empirical Approach to Modeling Lift Production** P. Mancini; F.H. Manar; A.R. Jones

2:30-3:00 PM	**Reduced-Order Two- and Three-Dimensional Vortex Modeling of Unsteady Separated Flows** J. Eldredge; D. Darakananda
3:00-3:30 PM	**The Lift Problem in Flapping Forward Flight at Low Reynolds Numbers** T. Liu; S. Wang; X. Zhang; G. He
3:30-4:00 PM	**Flow around an Oscillating Tandem-Wing Power Generator** I. Fenercioglu; B. Zaloglu; M. Ashraf; J. Young; J. Lai; M.F. Platzer
4:00-4:30 PM	**Fluid-Structure Interactions for Flexible and Rigid Tandem-Wings at Low Reynolds Numbers** R. Jones; D. Cleaver; I. Gursul
4:30-5:00 PM	**Trends in Early Vortex Formation on a Wall-to-wall Plate in Pure Plunge** S. Gunasekaran; A. Altman; K.O. Granlund
2:00 PM-5:30 PM, Sun Ballroom 3, **GNC-35. Novel Algorithms in Aircraft GNC**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Chair: Raghvendra Cowlagi, Worcester Polytechnic Inst; Co-Chair: Francois-David Hugon, Gulfstream Aerospace Corporation	
2:00-2:30 PM	**Research on SINS/CNS Gaussian Particle Filter Integrated Navigation Algorithm for Hypersonic Vehicle** Y. Yu; J. Xu; Z. Xiong; B. Liu
2:30-3:00 PM	**Adaptive Output Feedback Based on Closed-Loop Reference Models for Hypersonic Vehicles** D.P. Wiese; A.M. Annaswamy; J.A. Muse; M.A. Bolender; E. Lavretsky
3:00-3:30 PM	**A Selective Self-Locking Actuator and Control Allocation Approach for Thermal Load Minimization** D.B. Doman; M.W. Oppenheimer; W. Rone
3:30-4:00 PM	**SHERPA: a safe exploration algorithm for Reinforcement Learning controllers** T. Mannucci; E. Van Kampen; C.C. de Visser; Q. Chu
4:00-4:30 PM	**Flight Control Using Physical Dynamic Inversion** F. Zhang; F. Holzapfel
4:30-5:00 PM	**Distance Fields Over Grid method for Aircraft Envelope Determination** R. Helsen; E. Van Kampen; C.C. de Visser; Q. Chu
5:00-5:30 PM	**Fundamental Control System Design Issues for Scramjet-Powered Hypersonic Vehicles** J.A. Echols; K. Puttannaiah; K. Mondal; A. Rodriguez
2:00 PM-5:30 PM, Miami 1, **GNC-36. Robust Control of Uncertain Flight Systems**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Co-Chair: Peng Lu, Delft University of Technology; Chair: Jason Speyer, UCLA	
2:00-2:30 PM	**Trajectory Optimization under Uncertainty based on Polynomial Chaos Expansion** F. Xiong; Y. Xiong; B. Xue

2:30-3:00 PM	**Robustness and Tuning of Incremental Backstepping Approach** P. Lu; E. Van Kampen; Q. Chu
3:00-3:30 PM	**Output Feedback Adaptive Control for Uncertain Systems with Unmodeled Dynamics and Input Uncertainty** R. Chandramohan; A.J. Calise
3:30-4:00 PM	**Controller Synthesis for Periodic, Linear-Distributed Parameter Systems: A Channel Flow Application** S.M. Kang; J.L. Speyer; J. Kim
4:00-4:30 PM	**Cyclic Control for Multiple Satellite Cluster Flight Using Fixed Magnitude Thrust** H. Zhang; P. Gurfil
2:00 PM-5:30 PM, Sun Ballroom 6, **GNC-37. Mini/Micro Air Vehicle GNC II**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Chair: Soon-Jo Chung, University of Illinois at Urbana-Champaign; Co-Chair: Kevin Kochersberger, Virginia Polytechnic Institute and State University	
2:00-2:30 PM	**Fast Actuator Fault Detection and Reconfiguration for Multicopters** M. Frangenberg; J. Stephan; W. Fichter
2:30-3:00 PM	**Robust Tracking Control of a Quadrotor in the Presence of Uncertainty and Non-vanishing Disturbance** C.T. Ton
3:00-3:30 PM	**Robust Design of Transition Flight Control System with Input Constraint** R. Hatori; K. Uchiyama
3:30-4:00 PM	**Onboard Flow Sensing for Downwash Detection and Avoidance with a Small Quadrotor Helicopter** D. Yeo; N. Sydney; D.A. Paley; D. Sofge
4:00-4:30 PM	**Coordinated Standoff Flights for Multiple UAVs via Second-Order Sliding Modes** T. Yamasaki; S.N. Balakrishnan; H. Takano; I. Yamaguchi
2:00 PM-5:30 PM, Sun Ballroom 4, **GNC-38. Space Exploration and Transportation GNC**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Chair: Uday Shankar, The Johns Hopkins University Applied Physics Laboratory; Co-Chair: Tannen Van Zwieten, NASA	
2:00-2:30 PM	**Optimal Aerocapture Guidance** P. Lu; C.J. Cerimele; M.A. Tigges; D.A. Matz
2:30-3:00 PM	**IMU-DM Integrated Navigation and Terminal Reentry Guidance for Accurate Guided Reentry Flight** S. Matsumoto; Y. Kondoh; T. Imada; S. Kobayashi; N. Motoyama
3:00-3:30 PM	**Analysis of Geometric Effects on Tightly-Integrated INS/Vision for Lunar Descent Navigation** Y. Park; H. Jeon; C. Park
3:30-4:00 PM	**Variable Memory Recurrent Neural Networks For Launch Vehicle Attitude Control** R. Sclafani; P. Shankar

4:00-4:30 PM	**In-Flight Suppression of a Destabilized F/A-18 Structural Mode Using the Space Launch System Adaptive Augmenting Control System** J.H. Wall; C.J. Miller; C.E. Hanson; T.S. Van Zwieten; J. Orr; E. Gilligan
4:30-5:00 PM	**Launch Vehicle Manual Steering with Adaptive Augmenting Control: In-Flight Evaluations of Adverse Interactions Using a Piloted Aircraft** C.E. Hanson; C.J. Miller; T.S. Van Zwieten; E. Gilligan; J. Orr; J.H. Wall
5:00-5:30 PM	**Analysis of Orbit-Attitude Coupling of Spacecraft Near Small Solar System Bodies** G. Misra; A.K. Sanyal
2:00 PM-5:00 PM, Sun Ballroom 5, **GNC-39. Spacecraft Guidance, Navigation, and Control V**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Chair: John Liu, Boeing Defense, Space & Security	
2:00-2:30 PM	**Two-input two-output port model for mechanical systems** D. Alazard; J. Perez; C. Cumer; T. Loquen
2:30-3:00 PM	**Simulation and Analysis of Satellite Dynamics with Flexible Wire Antennas and Nutation Damper** Y. Hitachi; T. Kamiya; Y. Kusakawa; S. Sakai; A. Matsuoka
3:00-3:30 PM	**Spacecraft Adaptive Attitude Control with Application to Space Station Free-Flyer Robotic Capture** J. Shi; S. Ulrich; A. Allen
3:30-4:00 PM	**Solar Pressure Variable Structure Model Reference Adaptive Spacecraft Attitude Control in Elliptic Orbits** K. Lee; S.N. Singh
4:00-4:30 PM	**Satellite Attitude Control System Using Three-Dimensional Reaction Wheel** H. Watanabe; K. Masuda; K. Uchiyama
4:30-5:00 PM	**Attitude Tracking Control of a Spacecraft by Two Reaction Wheels** H. Gui; S. Xu
2:00 PM-5:30 PM, Sanibel 1, **GT-08. Hypersonic Test Capabilities II (Invited)**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: John Lafferty, AEDC; Co-Chair: Karen Berger, NASA-Langley Research Center	
2:00-2:30 PM	**Hypersonic Test Capabilities at AEDC's Aerodynamic and Propulsion Test Unit** G.D. Garrard
2:30-3:00 PM	**Recent Upgrades to the NASA Langley 8-Foot High Temperature Tunnel** S.F. Harvin; J.M. Curro; A.W. Fuchs; G.L. Mekkes
3:00-3:30 PM	**Hypersonic Aero Propulsion Clean Air Testbed (HAPCAT): Development and Activation Status** E. Tucker; W. Burfitt
3:30-4:00 PM	**Design and Characterization of the Michigan Hypersonic Expansion Tube Facility (MHExT)** Y.M. Abul-Huda; M. Gamba

4:00-4:30 PM	**Effects of Shock-Tube Cleanliness on Slender-Body Hypersonic Instability and Transition Studies at High-Enthalpy** N.J. Parziale; J.S. Jewell; I.A. Leyva; J. Shepherd; H. Hornung
4:30-5:00 PM	**Methods for Identifying Key Features in Schlieren Images from Hypersonic Boundary-Layer Instability Experiments** N. Shumway; S.J. Laurence
2:00 PM-5:30 PM, Miami 3, **GT-09. International Symposium on Strain-Gage Balances (Invited)**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Ray Rhew, NASA -Langley Research Center; Co-Chair: Keith Lynn, NASA Langley Research Center	
2:00-2:30 PM	**Design, Manufacturing, & Commissioning of a new NLR Half Model Balance for ETW** M. Wright
2:30-3:00 PM	**Flexural Fillet Geometry Optimization for Design of Force Transducers used in Aerodynamic Testing** K.C. Lynn
3:00-3:30 PM	**Rotating Shaft Balances for CRORs** T. Fetet
3:30-4:00 PM	**Development of an In-Situ Load System for Internal WT Balances Including Prediction Intervals** S.A. Commo
4:00-4:30 PM	**On the Application of Analogue Signal Integrated Circuits in a Refurbished Side Wall Balance** P. Bidgood
4:30-5:00 PM	**Variable Acceleration Force Calibration System (VACS)** T. Johnson
2:00 PM-5:30 PM, Osceola Ballroom 1, **IS-12. Enhancing Safety using Systems Health Management**, Technical Paper, **AIAA Infotech @ Aerospace**, Chair: Jorge Figueroa, NASA Stennis Space Center	
2:00-2:30 PM	**In-Flight Testing of a Bio-Inspired Approach for Assessment of an UAV Outside Bounds of Nominal Design** I. Moguel; H. Moncayo; A.E. Perez Rocha; M.G. Perhinschi
2:30-3:00 PM	**Application of Model-based Prognostics Framework to Pneumatic Valves on Cryogenic Testbed** C.S. Kulkarni; M. Daigle; G.S. Gorospe; K. Goebel
3:00-3:30 PM	**Developing a Fault Management Guidebook for NASA's Deep Space Robotic Missions** L.M. Fesq; R.M. Weitl
3:30-4:00 PM	**Verification of Functional Fault Models and the Use of Resource Efficient Verification Tools** R. Bis; W. Maul
4:00-4:30 PM	**Application of an AIS to the problem of through life health management of remotely piloted aircraft** J.G. Pelham; I. Fan; I. Jennions; J. McFeat
4:30-5:00 PM	**An Off-Runway Emergency Landing Aid for a Small Aircraft Experiencing Loss of Thrust** P.F. Di Donato; E.M. Atkins

2:00 PM-5:30 PM, Sarasota 3, **MDO-09. MDO: General Applications**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Co-Chair: Seongim Choi; Chair: Graeme Kennedy, Georgia Institute of Technology	
2:00-2:30 PM	**Large-scale Multi-material Topology Optimization for Additive Manufacturing** G. Kennedy
2:30-3:00 PM	**Multi-Objective Aeroacoustic Shape Optimization by Variable-Fidelity Models and Response Surface Surrogates** L.T. Leifsson; S. Koziel; S. Hosder
3:00-3:30 PM	**Adjoint - based Aeroacoustic Design Optimization for Blade Vortex Interaction Noise** E. Fabiano; D.J. Mavriplis; J. Sitaraman
3:30-4:00 PM	**Multi-Objective WindFarm Optimization Simultaneously Optimizing COE and Land Footprint of Wind Farms under Different Land Plot Availability** W. Tong; S. Chowdhury; A. Messac
2:00 PM-5:30 PM, Sun Ballroom 1, **MST-14. Unmanned Aerial Systems**, Technical Paper, **AIAA Modeling and Simulation Technologies Conference**, Chair: Jae Shin, The Aerospace Corporation	
2:00-2:30 PM	**System Identification, HIL and Flight Testing of an Adaptive Controller on a Small Scale Unmanned Aircraft** P. Kumar; J.E. Steck
2:30-3:00 PM	**Dynamic Modeling and Analysis of a Single Tilt-Wing Unmanned Aerial Vehicle** J. Jeong; S. Yoon; S. Kim; J. Suk
3:00-3:30 PM	**Effect of V-Tail Geometric Angle of Attack on a UAS 6 DOF Nonlinear Simulation** N.A. Smith; R. Lykins; S. Keshmiri
3:30-4:00 PM	**Kinematic Modeling of Bat Wing Motion Using Articular Surface Geometry** M.J. Bender; A. Kurdila; R. Mueller
4:00-4:30 PM	**Effects of Winglets on Small Unmanned Aerial Systems** C. Williams; J.M. Weaver; L. Fritz; A. Blevins
2:00 PM-5:30 PM, Sun Ballroom 2, **MST-15. Special Topics in Modeling and Simulation**, Technical Paper, **AIAA Modeling and Simulation Technologies Conference**, Chair: Bruce Jackson, NASA-Langley Research Center	
2:00-2:30 PM	**Requirements and Design Challenges in Rotorcraft Flight Simulations for Research Applications** F. Viertler; M. Hajek
2:30-3:00 PM	**A Symplectic Technique for Model Reduction of Wave Equations** L. Peng; K. Mohseni
3:00-3:30 PM	**Further Development of Verification Check-cases for Six-Degree-of-Freedom Flight Vehicle Simulations** B. Jackson; M.M. Madden; R. Shelton; M.P. Castro; D.M. Noble; C. Zimmerman

3:30-4:00 PM	**Design Data Management in Model-Based Design** S. Mahapatra; P. Gotika
4:00-4:30 PM	**Design Variant Management in Model-Based Design** S. Mahapatra; P. Gotika
2:00 PM-5:30 PM, Osceola Ballroom 5, **NDA-08. Non-Deterministic Methods**, Technical Paper, **17th AIAA Non-Deterministic Approaches Conference**, Chair: Christopher Roy, Virginia Tech; Co-Chair: Wataru Yamazaki, Nagaoka University of Technology	
2:00-2:30 PM	**Model and Data Uncertainty Effects on Reliability Estimation** S. Nannapaneni; S. Mahadevan
2:30-3:00 PM	**Hypervolume-based Multi-Objective Expected Improvement for Three -Objective Functions** J.E. Valenzuela-del Río; D.N. Mavris
3:00-3:30 PM	**Aerodynamic Uncertainty Quantification of Supersonic Biplane Airfoil via Polynomial Chaos Approach** Y. Suga; W. Yamazaki
3:30-4:00 PM	**Sequential Reliability Estimation Correction (SREC) with Univariate Revolving Integration (URI)** H. Bae
4:00-4:30 PM	**Multi-Source Surrogate Modeling with Bayesian Hierarchical Regression** S. Ghosh; R. Jacobs; D.N. Mavris
4:30-5:00 PM	**Sensitivity Analysis Methods for Systems with Epistemic Uncertainties** L.E. Hale; M. Patil; C.J. Roy
5:00-5:30 PM	**Uncertainty Quantification of State Boundaries in Thin Beam Buckling Experiments** G.W. Bartram; R.A. Perez; R. Wiebe; B.P. Smarslok
2:00 PM-5:30 PM, Emerald 1, **OPS-01. Space Operations**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Larry Bryant, Jet Propulsion Laboratory	
2:00-2:30 PM	**A Commercial Transportation System For Robotic Lunar Exploration** M. Tucker; D. Dolan
2:30-3:00 PM	**Compact 4D Envelopes For Integrated Air-and-Space Traffic Management** T.J. Colvin; J.J. Alonso
2:00 PM-4:00 PM, Osceola Ballroom B, **PANEL-08. NASA Research Plans for Assured Autonomy for Aviation Transformation**, Panel, **Forum 360**	
2:00 PM-5:30 PM, Emerald 3, **PC-19. Detonations, Explosions, and Supersonic Combustion II**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: Joanna Austin, University of Illinois at Urbana-Champaign; Co-Chair: Ethan Barbour, The Aerospace Corpation	
2:00-2:30 PM	**Development of a High Fidelity RDE Simulation Capability** P.A. Cocks; A.T. Holley; C.B. Greene; M. Haas

2:30-3:00 PM	**Three-dimensional behavior in oscillation mechanism of shock-induced combustion around a blunt projectile** Y. Sakuragi; A. Matsuo
3:00-3:30 PM	**Numerical Investigation of Shock-Induced Combustion with Unsteady Oscillation around Hypervelocity Conical Projectile** K. Maeda; A. Matsuo
2:00 PM-5:30 PM, Emerald 7, **PC-20. Rocket and Air-Breathing Combustion II,** Technical Paper, **53rd AIAA Aerospace Sciences Meeting,** Chair: Timothy Ombrello, Air Force Research Laboratory	
2:00-2:30 PM	**Effects of Injector Geometry on Co-Flowing Planar Jet Mixings under Supercritical Pressures** D. Muto; N. Tsuboi; H. Terashima
2:30-3:00 PM	**Prediction of Combustion Instability with Detailed Chemical Kinetics** S.V. Sardeshmukh; S.D. Heister; W.E. Anderson
3:00-3:30 PM	**A Three-Dimensional Analysis of Swirl Injector Flow Dynamics at Supercritical Conditions** X. Wang; H. Huo; Y. Wang; L. Zhang; V. Yang
2:00 PM-5:30 PM, Emerald 4, **PDL-11. Plasma & Laser Physics II,** Technical Paper, **53rd AIAA Aerospace Sciences Meeting,** Co-Chair: Heard Lowry, Aerospace Testing Alliance (ATA)	
2:00-2:30 PM	**Laser Induced Fluorescence Measurements of Xenon Ion Velocity Distributions near Ceramic Surfaces** S. Walsh; A.P. Yalin
2:30-3:00 PM	**Thomson Scattering Measurements of Electron Density and Electron Temperature in a Nanosecond Pulse Surface Discharge** A.M. Roettgen; I. Shkurenkov; W.R. Lempert; I.V. Adamovich
3:00-3:30 PM	**Measurement of the Vibrational Distribution Function of Chemically Produced Carbon Monoxide for the Development of a Chemical Carbon Monoxide Laser** K. Frederickson; J. Rich; W.R. Lempert; I.V. Adamovich
3:30-4:00 PM	**Laser Ignition of Methane-Air Mixtures with a Rapid Compression Machine** C. Dumitrache; M. Baumgardner; A. Marchese; A.P. Yalin
4:00-4:30 PM	**Application of the Modified Drift-Diffusion Theory to Study of the Two-Dimensional Structure of the Penning Discharge** S. Surzhikov
2:00 PM-5:30 PM, Naples 3, **Small Satellites - Fusion**	

3:30-5:30 PM	**Small Satellites - Fusion** Moderator: Jeremy Straub - University of North Dakota Panelists: **Jake Szatkowski**, United Launch Alliance **John W. Conklin**, University of Florida **Andrew Santangelo**, sci_Zone, Inc. **Scott Palo**, University of Colorado
2:00-2:30 PM	**Aerodynamics analyse and attitude control design of ZJUCube for QB50 project** T. Meng; D. Hu; B. Yang; Z. Jin
2:30-3:00 PM	**Feasibility of Small Unmanned Spacecraft Launches via Low Acceleration Railguns Comprising Helical Tracks** A. Hassan
3:00-3:30 PM	**OpenOrbiter Mechanical Design: a New Approach to the Design of a 1-U CubeSat** B.M. Kading
2:00 PM-5:30 PM, Osceola Ballroom 4, **SCS-09. Test and Qualification of Spacecraft Structures** , Technical Paper, **2nd AIAA Spacecraft Structures Conference**, Chair: Gregory Davis, Jet Propulsion Laboratory; Co-Chair: Sergio Pellegrino, California Institute of Technology	
2:00-2:30 PM	**MOIRE Primary Diffractive Optical Element Structure Deployment Testing** D. Waller; L. Campbell; J.L. Domber; D. Putnam; R.T. Thompson
2:30-3:00 PM	**The Design and Test of the GOSSAMER-1 Boom Deployment Mechanisms Engineering Model** M. Straubel; P. Seefeldt; P. Spietz; C. Huehne
3:00-3:30 PM	**Testing the Deployment Repeatability of a Precision Deployable Boom Prototype for the Proposed SWOT KaRIn Instrument** G.S. Agnes; J. Waldman; L. Peterson; R. Hughes
2:00 PM-5:30 PM, Sun Ballroom D, **SD-16. Special Session: Adaptive Aeroelastic Wing Shaping Control II** , Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Nhan Nguyen, NASA-Ames Research Center; Co-Chair: James Urnes, Boeing Engineering Operations & Technology	
2:00-2:30 PM	**Aerodynamic Load Analysis of a Variable Camber Continuous Trailing Edge Flap System on a Flexible Wing Aircraft** E. Ting; T. Dao; N.T. Nguyen
2:30-3:00 PM	**Aeroelasticity of Axially Loaded Aerodynamic Structures for Truss-Braced Wing Aircraft** N.T. Nguyen; E. Ting; S. Lebofsky

3:00-3:30 PM	**Comparison of Unsteady Aerodynamics Approximations for Time-Domain Representation of Frequency-Independent Aeroelastic State-Space Models** E.A. Tal; N.T. Nguyen; E. Ting
3:30-4:00 PM	**Active Control for Elastic Wing Structure Dynamic Modes** J.M. Urnes; J.R. Dykman; H. Truong
4:00-4:30 PM	**A Multi-Objective Flight Control Approach for Performance Adaptive Aeroelastic Wing** N.T. Nguyen; E.A. Tal
4:30-5:00 PM	**LMI-based Multiobjective Optimization and Control of Flexible Aircraft Using VCCTEF** S. Swei; G.G. Zhu; N.T. Nguyen
2:00 PM-5:30 PM, Tampa 1, **SD-17. Gust and Turbulence Loads** , Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Paul Taylor, Gulfstream Aerospace Corporation; Co-Chair: Hyoung Kim, Boeing Defense, Space & Security	
2:00-2:30 PM	**Flight Loads and Atmospheric Turbulence Analysis From a Fleet of ASM/Lead Aircraft** A. Menon; L.K. Kliment; K. Rokhsaz; J. Nelson; B. Terning
2:30-3:00 PM	**Nonlinear Folding Wing-Tips for Gust Loads Alleviation** V. Hodigere Siddaramaiah; D. Calderon; J.E. Cooper; T. Wilson
3:00-3:30 PM	**Efficient Prediction and Uncertainty Propagation of Correlated Loads** I. Tartaruga; P. Sartor; J.E. Cooper; S. Coggon; Y. Lemmens
3:30-4:00 PM	**Dynamic Response of Elastic Aircrafts with Consideration of Two-dimensional Discrete Gust Excitation** Y. Cheng
2:00 PM-5:30 PM, Tampa 2, **SD-18. Active Aeroelastic Control**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Inderjit Chopra, University of Maryland; Co-Chair: Anthony Palazotto, AFIT	
2:00-2:30 PM	**Variable Stiffness Technique for Turbomachinery using Shape Memory Alloys** R.J. Wischt; N. Garafolo
2:30-3:00 PM	**Aeroelastic System Control by a Multiple Spoiler Actuation and MRAC Scheme** M. Cassaro; M. Battipede; P. Marzocca; G. Ahmadi
3:00-3:30 PM	**Experimental investigation of an autonomous flap for load alleviation** L. Bernhammer; S.T. Navalkar; J. Sodja; R. De Breuker; M. Karpel
3:30-4:00 PM	**Design Improvements of Smart Active Trailing-edge Flap for Rotating Test** J. Kang; W. Eun; J. Lim; U. Visconti; S. Shin
4:00-4:30 PM	**Active Control on Helicopter Blades with a L-Shaped Gurney Flap** V. Motta; G. Quaranta
4:30-5:00 PM	**A Modified Receptance Method for Active Control of a Nonlinear Aeroelastic System** C. Zhen; D. Li; J. Xiang

2:00 PM-5:30 PM, Tampa 3, **SD-19. Test and Evaluation and System Identification** , Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Bruce Willis, Boeing Defense, Space & Security; Co-Chair: Anant Grewal, National Research Council Canada	
2:00-2:30 PM	**Experimental Evaluation of Wind Turbine Rotor Tower Structural Dynamic Interaction** T.J. Arsenault; P. Marzocca; G. Coppotelli; A. Achuthan; C. Grappasonni
2:30-3:00 PM	**Design and Testing of an Active Aeroelastic Test Bench (AATB) for Unsteady Aerodynamic and Aeroelastic Experiments** J. Ertveldt; J. Schoukens; R. Pintelon; S. Vanlanduit; B. De Pauw; A. Rezayat
3:00-3:30 PM	**Preparatory Analyses and Tests of W-WING Whirl Flutter Demonstrator** J. Cecrdle; J. Malecek; O. Vich; P. Malinek
3:30-4:00 PM	**Correlation and Updating of an Unmanned Aerial Vehicle Finite Element Model** S. Mezzapesa; M. Arras; G. Coppotelli; J. Miller; D.N. Valyou; P. Marzocca
4:00-4:30 PM	**Design and Analysis of a Wind Tunnel Test Model System for Rolling Maneuver Load Alleviation of Flying Wings** H. Yin; Z. Wu; C. Yang
4:30-5:00 PM	**Fin-actuator System Modeling and Experimental Validating for Aeroelastic Research** R. Zhang; Z. Wu; C. Yang
2:00 PM-5:30 PM, Miami 2, **SE-02. Systems Engineering II**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Michelle Bailey, Defense Acquisition University; Co-Chair: David Dress, NASA Langley Research Center	
2:00-2:30 PM	**Adapting the Systems Engineering Paradigm to Revitalize Program Control/Program Integration Processes into USAF Complex Systems Acquisition Programs** R.R. Flores
2:30-3:00 PM	**Decision Analysis Applied to Small Satellite Risk Management** K. . Gamble; E. Lightsey
3:00-3:30 PM	**Seeking an Open Framework for Systems Engineering in Aeronautics and Astronautics** V.S. Johnson; R.E. Voros
3:30-4:00 PM	**Report on the Science of Systems Engineering Workshop** P.D. Collopy
2:00 PM-5:30 PM, Osceola Ballroom 2, **SOF-02. Software Challenges in Aerospace Workshop II**, Technical Paper, **AIAA Infotech @ Aerospace**, Co-Chair: Stephen Blanchette, Software Engineering Institute; Co-Chair: Misty Davies, NASA-Ames; Chair: Karen Feigh, Georgia Institute of Technology; Co-Chair: James Murphy, NASA Ames Research Center	
2:00-2:30 PM	**Verification of Real-Time Systems using Statistical Model Checking** J.P. Hansen; L. Wrage
2:30-3:00 PM	**Dependability of Software of Unknown Pedigree** S.P. Cook; A. Buttner; E. Lester

3:00-3:30 PM	**Trusting Outsourced Components In Flight Critical Systems** F. Howar; T. Kahsai; A. Gurfinkel; C. Tinelli
3:30-4:00 PM	**Maintenance Phase Considerations for Onboard Flight Software Development** K. Gundy-Burlet
4:00-4:30 PM	**Wrap-Up Discussion** S. Blanchette; J.R. Murphy; M.D. Davies
2:00 PM-5:30 PM, Sarasota 1, **STR-17. Design, Test and Analysis II**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Gerald Mabson, Boeing Engineering Operations & Technology; Co-Chair: Brett Bednarcyk, NASA Glenn Research Center	
2:00-2:30 PM	**Development of the PRSEUS Multi-Bay Pressure Box for a Hybrid Wing Body Vehicle** D.C. Jegley; A. Velicki
2:30-3:00 PM	**On the Study of PRSEUS - Structural Integrity and Wing Design for General Aviation Aircraft** S. Behl; R. Joshi; T. Surti; K. Ali; D. Kim; A. Tamijani; A. Velicki
3:00-3:30 PM	**Preliminary Weight Savings Estimate for a Commercial Transport Wing Using Rod-stiffened Stitched Composite Technology** A.E. Lovejoy
3:30-4:00 PM	**Damage Tolerant Novel Laminated Structures** M.A. Falugi
4:00-4:30 PM	**Peridynamic Modeling of Defects in Composites** Y. Hu; E. Madenci; N.D. Phan
2:00 PM-5:30 PM, Tallahassee 3, **STR-18. Special Session: USAF Benchmarking of Composite Damage Prediction Methods** , Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Stephen Clay, Air Force Reseach Laboratory; Co-Chair: Stephen Engelstad, Lockheed Martin Aeronautics	
2:00-2:30 PM	**Assessment of Composite Damage Growth Tools for Aircraft Structure - Part I** S.P. Engelstad; J. Action; S.B. Clay; R. Holzwarth; R.W. Dalgarno; D. Robbins
2:30-3:00 PM	**Assessment of Reduced Order Homogenization for Damage Tolerant Design Principles (DTDP) of Advanced Composite Aircraft Structures** A. Shojaei; J. Fish
3:00-3:30 PM	**Static Validation of Composite Open Hole Analysis Technique for Standard and nonstandard Laminate -Part 1** F. Abdi; C. Godines; L. Minnetyan
3:30-4:00 PM	**Application of Reduced Order Multiscale Homogenization to 'Assess and Quantify the Benefits of Applying Damage Tolerant Design Principles to Advanced Composite Aircraft Structures'** M.J. Bogdanor; R.D. Crouch; C. Oskay

4:00-4:30 PM	**Tensile and Compression Strength Prediction in Laminated Composites by Using Discrete Damage Modeling** E.V. Iarve; K.H. Hoos; M. Braginsky; E. Zhou; D. Mollenhauer
4:30-5:00 PM	**Multiscale Static Analysis of Notched and Unnotched Laminates Using the Generalized Method of Cells** L. Hansen; A.M. Waas; B. Stier; P. Naghipour; S.M. Arnold; B.A. Bednarcyk; E.J. Pineda
2:00 PM-5:30 PM, Sarasota 2, **STR-19. Special Session: Structural Joints & Repair I**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Stephanie TerMaath, University of Tennessee; Co-Chair: Donald Norwood, Lockheed Martin Aeronautics	
2:00-2:30 PM	**Flaw and Damage Tolerance of Redundant Adhesively Bonded Joints for Sandwich Structures** E.C. Lundgren; D.N. Patel; V.K. Goyal; C.N. Phan
2:30-3:00 PM	**Adhesively Bonded Joint Modeling Approaches using Linear Finite Element Analysis** A.L. Lyford; T. Stoumbos; R.K. Kapania
3:00-3:30 PM	**Thermo-mechanical Stresses in Single-Lap Composite Adhesive Joints** S. Kumar
3:30-4:00 PM	**Modeling of Geometrically Graded Multi-material Single-Lap Joints** A. de Tejada Alvarez ; S. Kumar
4:00-4:30 PM	**A Variational Approach for Stress Analysis of Single-lap bonded Joints under Mechanical and Thermal Loads** S. Kumar; S. Tampi; G. Pal
2:00 PM-5:30 PM, Tallahassee 2, **TES-03. Energy Efficiency and Waste Reduction**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Ahsan Choudhuri, University of Texas at El Paso	
2:00-2:30 PM	**Role of Benzene on Thermal Stage Performance in a Claus Process** S. Ibrahim; A. Al Shoaibi; A.K. Gupta
2:30-3:00 PM	**Analysis of Lift Force, Drag Force, Side Force, Pitching Moment, Yawing Moment, and Rolling Moment** R.S. Amano; Y. Yen; B. Sinkovec
3:00-3:30 PM	**Thermal Management in Energy Efficient Air Conditioned Buildings** A.A. Fahim; E.E. Khalil
3:30-4:00 PM	**Use of Algebraic-Stress Model for determination of near-wall Reynolds-Stresses in turbulent flow over a flat plate** R.S. Amano; S. Beyhaghi
4:00-4:30 PM	**Mathematical Modeling of Air Flow and Comfort in Places of Worship** E.E. Khalil

2:00 PM-5:30 PM, Sun Ballroom B, **TP-09. NASA Entry Systems Modeling Project**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Michael Wright, NASA Ames Research Center	
2:00-2:30 PM	**An Overview of Technology Investments in the NASA Entry Systems Modeling Project** M. Wright; M.F. Hughes; M. Barnhardt; A.M. Calomino
2:30-3:00 PM	**Development of the US3D Code for Advanced Compressible and Reacting Flow Simulations** G.V. Candler; H.B. Johnson; I. Nompelis; V.M. Gidzak; P.K. Subbareddy; M. Barnhardt
3:00-3:30 PM	**Radiative Heating for MSL Entry: Verification of Simulations from Ground Test to Flight Data** B.A. Cruden; A.M. Brandis; T.R. White; D. Bose
3:30-4:00 PM	**Probabilistic Design Demonstration of a Flexible Thermal Protection System for a Hypersonic Inflatable Aerodynamic Decelerator** S.A. Tobin; J.A. Dec
4:00-4:30 PM	**Electron-Impact Excitation Cross Sections for Modeling Non-Equilibrium Gas** W.M. Huo; Y. Liu; M. Panesi; A. Wray; D.F. Carbon
4:30-5:00 PM	**Measurements and Analysis of Mars Entry, Decent, and Landing Aerothermodynamics at Flight-Duplicated Enthalpies in LENS-XX Expansion Tunnel** M.G. MacLean; A.T. Dufrene; Z.R. Carr; R.A. Parker; M.S. Holden

Friday, January 09, 2015

Time	Session or Event Info
8:00 AM-9:00 AM, Osceola Ballroom CD, **PLNRY-05. Friday Morning Keynote**, Plenary, **Forum**	
9:30 AM-1:00 PM, Osceola Ballroom 3, **ACD-07. Transport Aircraft Design**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Michael Drake, Boeing Commercial Airplanes	
9:30-10:00 AM	**Transport Category Wing Weight Estimation Using A Optimizing Beam-Element Structural Formulation** T.T. Takahashi; T. Lemonds
10:00-10:30 AM	**Knowledge-Based Engineering Approach to the Finite Element Analysis of the Oval Fuselage Concept** S. De Smedt; R. Vos
10:30-11:00 AM	**The Right Single-Aisle for the Future Market** T. Lammering; T. Schneider; E. Stumpf
11:00-11:30 AM	**Conceptual Design of a Mach 0.95 Cruise N+1 Commercial Transport** C. Langley; R. Burt; N. Patel; I. Martinez; A. Leon; T.T. Takahashi

11:30-12:00 PM	**Variable Camber Impact on Aircraft Mission Planning** F.N. Peter; K. Risse; F. Schueltke; E. Stumpf
12:00-12:30 PM	**KU Jayhawk Economic Turboprop Transport, Winner AIAA Undergraduate Team Design Competition** B. Basgall
9:30 AM-1:00 PM, Osceola Ballroom 4, **ACD-08. Aircraft Design Case Studies**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Gil Crouse, Sierra Nevada Corporation	
9:30-10:00 AM	**Design and Flight Test Study of a VTOL UAV** Z. Öznalbant; M.S. Kavsaoglu
10:00-10:30 AM	**C-17 Conversion System for Fire Fighting Operations** C. Bil
10:30-11:00 AM	**Design of a Severe Storm Research UAS** A.S. Avery; J.D. Jacob
11:00-11:30 AM	**Conceptual Study and Prototype Design of a Subsonic Transport UAV with VTOL Capabilities** K. Turkoglu; S. Najafi
11:30-12:00 PM	**Assessment of Potential Benefit of Formation Flight at Preliminary Aircraft Design Level** Y. Liu; K. Risse; K. Franz; E. Stumpf
9:30 AM-12:30 PM, Captiva 2, **AFM-15. Launch Vehicle, Missile, and Projectile Flight Mechanics II**, Technical Paper, **AIAA Atmospheric Flight Mechanics Conference**, Chair: Frank Fresconi, US Army Research Lab	
9:30-10:00 AM	**Calculating Expectation of Casualty for Hypersonic Reusable Launch Vehicles** J.A. Lechniak; C.C. Chinske; R.W. Carr; T.R. Jorris
10:00-10:30 AM	**Uncertainty Engagement Analysis of Exoatmospheric Interceptor Based on Reachable Set Model** C. Hua; L. Chen; Y. Zhang; G. Tang
10:30-11:00 AM	**Capturing the Global Feasible Design Space for Launch Vehicle Ascent Trajectories** M.J. Steffens; D.N. Mavris; S.J. Edwards
11:00-11:30 AM	**Guidance and Control of a Man Portable Precision Munition Concept** F. Fresconi; J.D. Rogers
9:30 AM-1:00 PM, Tallahassee 1, **AMT-08. Aerodynamic Diagnostics Tool for Supersonic and Hypersonic Flows**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Kevin Lowe, Virginia Tech; Co-Chair: Greg Johnston, Texas A&M University	
9:30-10:00 AM	**Measurements of Ablation-Products Transport in a Mach 5 Turbulent Boundary Layer using Naphthalene PLIF** C. Combs; N.T. Clemens
10:00-10:30 AM	**Model Deformation Measurements of Sonic Boom Models in the NASA Ames 9- by 7- Ft Supersonic Wind Tunnel** E.T. Schairer; L.K. Kushner; T.J. Garbeff; J.T. Heineck
10:30-11:00 AM	**Direct Measurements of Skin Friction at AEDC Hypervelocity Wind Tunnel 9** R.J. Meritt; J.A. Schetz; E.C. Marineau; D.R. Lewis

11:00-11:30 AM	**Development of Particle Image Velocimetry in a Mach 2.7 Wind Tunnel at AEDC White Oak** J.M. Brooks; A.K. Gupta; M. Smith; E.C. Marineau
9:30 AM-1:00 PM, Tallahassee 2, **AMT-09. Aerodynamic Surface Measurements,** Technical Paper, **53rd AIAA Aerospace Sciences Meeting,** Co-Chair: Tindaro Ioppolo, Southern Methodist University; Co-Chair: Mark Sheplak, University of Florida	
9:30-10:00 AM	**Error Source Studies of Direct Measurement Skin Friction Sensors** R.J. Meritt; J.M. Donbar; N.J. Molinaro; J.A. Schetz
10:00-10:30 AM	**Characterization of an Optical Moiré Wall Shear Stress Sensor for Harsh Environments** D.A. Mills; T. Chen; M. Sheplak
10:30-11:00 AM	**Investigation of a Photonic Wall Pressure and Shear Stress Sensor** A. Zamanian; T. Ioppolo
11:00-11:30 AM	**Measuring Shear Stress with a Microfluidic Sensor to improve Aerodynamic Efficiency** C.N. Hughes; D. Dutta; Y. Bashirzadeh; K. Ahmed; S. Qian
11:30-12:00 PM	**Accuracy and Survivability of Distributed Fiber Optic Temperature Sensors** N. Abdul Rahim; M.A. Davis; L. Routhier; J. Chevalier; J. Bos; S. Kreger; E. Sanborn
12:00-12:30 PM	**Bio-Inspired Air Data Sensing Probe for High Angles of Attack and Sideslip** S. Farokhi; R. Taghavi; S. Keshmiri
12:30-1:00 PM	**High Temperature, High Frequency Fiber Optic Strain Measurement System** M.A. Davis; J.R. Pedrazzani; R. Hull; M. Castellucci
9:30 AM-12:30 PM, Naples 1, **APA-39. Weapons Aerodynamics: Missile/Projectile/Guided-Munitions, Carriage & Store Separation,** Technical Paper, **53rd AIAA Aerospace Sciences Meeting,** Chair: Kelsey Denissen, Sandia National Labs; Co-Chair: Brian McGrath, JHU/Applied Physics Laboratory	
9:30-10:00 AM	**Effects of Turbulence Model on Prediction of Hot-Gas Lateral Jet Interaction in a Supersonic Crossflow** J. DeSpirito
10:00-10:30 AM	**The Effect of Canard Interactions on Aerodynamic Performance of a Fin-Stabilized Projectile** S.I. Silton; F. Fresconi
10:30-11:00 AM	**CFD Database for the Development of a Non-Linear Model for Rolling Moment** A. Nelson; G. McGowan; F.G. Moore
11:00-11:30 AM	**Statistical Analysis of Jettison Ejection Scenarios** P.H. Reisenthel; D.J. Lesieutre; O.E. Quijano
11:30-12:00 PM	**Influences of the gap between all-movable rudders and the missile body on flow fields** D. Li; J. Zhang; X. Guo

9:30 AM-12:30 PM, Destin 2, **APA-40. Applied CFD & Numerical Correlations with Experimental Data III**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: James DeBonis, NASA Glenn Research Center; Co-Chair: Kirk Vanden, USAF	
9:30-10:00 AM	**Evaluation of Five Turbulence Models for Accurate Numerical Simulation of 2D Slot Nozzle Ejector** C. Graham; R.K. Agarwal
10:00-10:30 AM	**Application of a New One-Equation Turbulence Model Based on k-ω Closure to Flow in S-Ducts** H. Xu; T. Wray; C. Fiola; R.K. Agarwal
10:30-11:00 AM	**Simulation of Atmospheric-Entry Capsules in the Subsonic Regime** S.M. Murman; R. Childs; J. Garcia
11:00-11:30 AM	**Aerodynamics of Finite Cylinders in Quasi-Steady Flow** D. Prosser; M. Smith
9:30 AM-1:00 PM, Naples 3, **APA-41. Low speed, Low Reynolds Number & VSTOL/STOL Aerodynamics**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Michael Ol, US Air Force Reseach Laboratory	
9:30-10:00 AM	**Enhancing Lift on a Flat Plate using Vortex Pairs generated by Synthetic Jet** X. Xia; K. Mohseni
10:00-10:30 AM	**Open-Loop Flow Control At Low Reynolds Numbers Using Periodic Airfoil Morphing** G.R. Jones; M.T. Debiasi; Y. Bouremel; M.J. Santer; G. Papadakis
10:30-11:00 AM	**Aerodynamics of Low Reynolds Number Axial Compressor Sections** A. Maffioli; C. Hall; S. Melvin
11:00-11:30 AM	**Numerical Investigations of Ducted Fan Hover Performance for FIW Applications** C. Sheng; Q. Zhao; N.P. Bi
11:30-12:00 PM	**Analysis of the flow field around the wing section of a FanWing aircraft under various flow conditions** B.H. Saracoglu; G. Paniagua
12:00-12:30 PM	**Outwash Measurements of a Dual Impinging Jet Scale Model** L.M. Myers; D.K. McLaughlin
12:30-1:00 PM	**Numerical Simulation of Twin Impinging jets in Tandem through a Crossflow** D.F. Vieira; J.M. Barata; F.P. Neves; A.R. Silva
9:30 AM-12:30 PM, Naples 2, **APA-42. Transonic & Supersonic Aerodynamics**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Christopher Rosema, US Army AMRDEC; Co-Chair: Edward Feltrop, The Cessna Aircraft Company	
9:30-10:00 AM	**Reynolds-Averaged Navier-Stokes Simulations of Shock Buffet on Half Wing-Body Configuration** F. Sartor; S. Timme
10:00-10:30 AM	**Numerical Prediction of Planar Shock Wave Interaction with a Cylindrical Body** V.A. Bhagwandin

10:30-11:00 AM	**Investigations of Underexpanded Moist Air Sonic Jets from Axisymmetric Convergent Nozzles** R. Mine; D. Ono; Y. Miyazato
11:00-11:30 AM	**A Numerical Study of High Mach and Low Reynolds Number Flow Around Airfoils** K. Wang; Z. Zhou; X. Xu; W. Gan
9:30 AM-1:00 PM, Destin 1, **APA-43. Special Session: Aerodynamic Design Optimization of Benchmark Cases III**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: David Zingg, University of Toronto; Co-Chair: John Vassberg, Boeing Engineering Operations & Technology	
9:30-10:00 AM	**Transonic Airfoils and Wings Design Using Inverse and Direct Methods** M. Zhang; A.W. Rizzi; R.K. Nangia
10:00-10:30 AM	**Application of OPTIMENGA_AERO to Constrained Aerodynamic Design** B. Epstein; S. Peigin
10:30-11:00 AM	**Comparison of Inexact- and Quasi-Newton Algorithms for Aerodynamic Shape Optimization** A. Dener; G.K. Kenway; J.E. Hicken; J. Martins
11:00-11:30 AM	**Large-scale aircraft design using SU2** F. Palacios; T.D. Economon; J.J. Alonso
11:30-12:00 PM	**Control Point-Based Aerodynamic Shape Optimization Applied to AIAA ADODG Test Cases** D.J. Poole; C.B. Allen; T. Rendall
12:00-12:30 PM	**Adjoint-Based Aerodynamic Optimization of Benchmark Problems** S. Nadarajah
9:30 AM-12:30 PM, Osceola Ballroom 2, **CMS-01. High Performance and Embedded Computing Technologies for Aerospace**, Technical Paper, **AIAA Infotech @ Aerospace**, Chair: Chiping Li, Air Force Office of Scientific Research	
9:30-10:00 AM	**High-Performance Optimizations of the Unstructured Open-Source SU2 Suite** T.D. Economon; S.R. Copeland; F. Palacios; J.J. Alonso; G. Bansal
10:00-10:30 AM	**COTS Multicore Processors in Avionics Systems: Challenges and Solutions** D. de Niz; B. Andersson; L. Wrage
10:30-11:00 AM	**MPI/Open-MP Hybridization of Higher Order WENO Scheme for the Incompressible Navier-Stokes Equations** M. selvam; K.A. Hoffmann
11:00-11:30 AM	**Multidisciplinary Simulation Acceleration using Multiple Shared-Memory Graphical Processing Units** J.Y. Kemal; R.L. Davis; J.D. Owens
9:30 AM-1:00 PM, Miami 2, **FD-50. CFD Solution Adaptation & Optimization**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Michael Neaves, Corvid Technologies; Co-Chair: David Young, Raytheon Missile Systems	

9:30-10:00 AM	**Time-averaged steady vs. unsteady adjoint: a comparison for cases with mild unsteadiness** J. Hueckelheim; S. Xu; M. Gugala; J. Müller
10:00-10:30 AM	**Optimization with LES -- algorithms for dealing with sampling error of turbulence statistics** C. Talnikar; P.J. Blonigan; J. Bodart; Q. Wang
10:30-11:00 AM	**Ventus: An Overset Adaptive Cartesian Simulation Framework for Moving Boundary Problems, Part II - Parallelism and Dynamic Load Balancing** R.E. Harris; B.R. Williams
11:00-11:30 AM	**A Hybrid Petrov-Galerkin Method for Optimal Output Prediction** S. Kast; J.P. Dahm; K. Fidkowski
11:30-12:00 PM	**A Computational Approach to Slosh Damping with Floating Magnetoactive Micro-baffles** V. Santhanam; M. Ricklick; D. Kim; S.N. Gangadharan
12:00-12:30 PM	**A Multi-Mesh CFD Technique for Adaptive Mesh Solutions** C.W. Jackson; C.J. Roy
12:30-1:00 PM	**Analysis of a Turbine Flow Meter Calibration Curve using CFD** C. Tegtmeier; P. Anusonti-Inthra; J. Winchester
9:30 AM-1:00 PM, Sun Ballroom A, **FD-51/PDL-12. Plasma Actuators and Flow Control,** Technical Paper, **53rd AIAA Aerospace Sciences Meeting,** Co-Chair: Jesse Little, The University of Arizona; Co-Chair: Igor Adamovich, Ohio University	
9:30-10:00 AM	**The Effects of Laser Plasma Discharge on a Separating Boundary Layer** A.V. Bright; N.R. Tichenor; R. Wlezien
10:00-10:30 AM	**Supersonic Cavity Control Using Plasma Actuators** N.J. Webb; M. Samimy
10:30-11:00 AM	**On the boundary and separated flow using pulsed nanosecond DBD plasma actuators** Z. Zhao; J. Li; J. Zheng; B. Khoo; Y. Cui
11:00-11:30 AM	**Dynamics of charge transfer and energy coupling in surface discharges on μsec to msec time scales** S.B. Leonov; I.V. Adamovich; V. Petrishchev
11:30-12:00 PM	**Experimental Study of a Magnetohydrodynamic Plasma Actuator in Quiescent Atmospheric Air** Y. Choi; M. Gray; J. Sirohi; L.L. Raja
9:30 AM-12:30 PM, Sanibel 2, **FD-52. Separated Flows,** Technical Paper, **53rd AIAA Aerospace Sciences Meeting,** Co-Chair: Hermann Fasel; Co-Chair: William Liou, Western Michigan University	
9:30-10:00 AM	**Effect of Free-Stream Turbulence on the Structure and Dynamics of Laminar Separation Bubbles** S. Hosseinverdi; H.F. Fasel
10:00-10:30 AM	**Implicit LES of turbulent, separated flow: wall-mounted hump configuration** S. Sekhar; N.N. Mansour; D. Higuera Caubilla

10:30-11:00 AM	**Flow Features of the Near Wake of a Flat Plate With Turbulent Separating Boundary Layers** M.M. Rai
11:00-11:30 AM	**Prediction of Separation with a Third-Order-Moment Model** M.E. Olsen
9:30 AM-12:30 PM, Tallahassee 3, **FD-53. Shear Layers**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Thomas McLaughlin, US Air Force Academy; Co-Chair: Jurgen Seidel, USAF Academy	
9:30-10:00 AM	**Streamwise vortices in plane mixing layers originating from laminar or turbulent initial conditions** S.N. Hug; W.A. McMullan; S.J. Garrett
10:00-10:30 AM	**Application of the Lattice Boltzmann Method to Shear Layer Flows** B.M. Duda; E. Fares; R. Kotapati
10:30-11:00 AM	**DNS Study on the Evolution of Vortical Packets and Their Interactions in Boundary Layer** Y. Yan; C. Liu
11:00-11:30 AM	**Spectral Scaling in a Supersonic Reattaching Shear Layer** T.J. Leger; J. Poggie
11:30-12:00 PM	**Reynolds Number Effects on Airfoils in Reverse Flow** A.H. Lind; L.R. Smith; J. Milluzzo; A.R. Jones
9:30 AM-1:00 PM, Daytona 2, **FD-54. Shock Boundary Layer Interaction**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Nicholas Bisek, Air Force Reseach Laboratory; Co-Chair: Mark McQuilling, Saint Louis University	
9:30-10:00 AM	**Transition Effect on Shock Wave / Boundary Layer Interaction at M=1.47** P.A. Polivanov; A. Sidorenko; A. Maslov
10:00-10:30 AM	**Transition location effects on normal shock wave--boundary layer interactions** T.S. Davidson; H. Babinsky
10:30-11:00 AM	**Sidewall Interaction of a Supersonic Flow over a Compression Ramp** N.J. Bisek
11:00-11:30 AM	**Unsteadiness in Shock Wave Boundary Layer Interactions across Multiple Interaction Configurations** J.A. Threadgill; P.J. Bruce
9:30 AM-1:00 PM, Sanibel 3, **FD-55. Turbulence Modeling III**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: George Huang, Wright State University; Co-Chair: Yee Chee See, University of Michigan	
9:30-10:00 AM	**Investigation of hybrid RANS-LES methods to understand their predictive capabilities in flows with separation** N. Jain; J.D. Baeder
10:00-10:30 AM	**Cut-Cell Method Based Large-Eddy Simulation of a Tip-Leakage Vortex of an Axial Fan** A. Pogorelov; M.H. Meinke; W. Schroeder; R. Kessler

10:30-11:00 AM	**High order LES for Supersonic Backward-facing Step Flow with Turbulent Inflow** S. Chern; G. Lobser; M. Schoonmaker; E. Heyde; C. Liu
11:00-11:30 AM	**Recent improvements in the formulation of mode III of ZDES (Zonal Detached Eddy Simulation) for WMLES use at $Re_\theta > 10^4$** N. Renard; S. Deck
11:30-12:00 PM	**Potential of the elliptic blending Reynolds stress model for use in hybrid RANS-LES methods** R. Roy; M.K. Stoellinger
9:30 AM-12:30 PM, Daytona 1, **FD-56. Turbulent Boundary Layers**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Co-Chair: Jonathan Poggie, USAF AFRL/RBAC	
9:30-10:00 AM	**Compressible Turbulent Boundary Layer Simulations: Resolution Effects and Turbulence Modeling** J. Poggie
10:00-10:30 AM	**An Approximate Turbulent Pressure Fluctuation Frequency Spectra for a Finite Supersonic Plate** L.J. DeChant; J.A. Smith
10:30-11:00 AM	**Investigation of Numerical Schemes for Direct Numerical Simulations of Supersonic Boundary Layers** C.I. Morris
11:00-11:30 AM	**Implicit large-eddy simulations of zero-pressure gradient, turbulent boundary layer** S. Sekhar; N.N. Mansour
9:30 AM-1:00 PM, Sun Ballroom C, **FD-58. Transition Open Forum**, Panel, **53rd AIAA Aerospace Sciences Meeting (non-paper sessions)**, Chair: Helen Reed, Texas A&M University	
9:30 AM-12:30 PM, Miami 1, **GNC-40. Intelligent Systems in GNC**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Chair: Mark Balas, Embry-Riddle Aeronautical University; Co-Chair: Joseph Connolly, NASA Glenn Research Center	
9:30-10:00 AM	**Robust Three-Dimensional Collision Avoidance for Fixed-Wing Unmanned Aerial Systems** T.J. Stastny; G. Garcia; S. Keshmiri
10:00-10:30 AM	**Aspects of Intuitive Control: Stabilize, Optimize, and Identify** P. Nuthi; K. Subbarao
10:30-11:00 AM	**Reinforcement Learning Applied to a Quadrotor Guidance Law in Autonomous Flight** J.L. Junell; E. Van Kampen; C.C. de Visser; Q. Chu
11:00-11:30 AM	**Discrete Multiobjective Optimization Methodology applied to the Mixed Actuators Problem and Tested in a Hardware-in-the-loop Rendezvous Simulator** W. Gomes; E. Marconi Rocco; T. Boge; F. Rems; H. Benninghoff
11:30-12:00 PM	**Aircraft Energy Management: Finite-time Optimal Control with Dynamic Constraints** M. Yasar; H.G. Kwatny; G. Bajpai

9:30 AM-12:30 PM, Sun Ballroom 6, **GNC-41. Design and Analysis of Aircraft Control Laws**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Chair: Daniel Ossmann, DLR - German Aerospace Center; Co-Chair: Francois-David Hugon, Gulfstream Aerospace Corporation	
9:30-10:00 AM	**Control of Nonlinear Aerospace Systems using Micro-Jet Actuators** S.S. Mehta; W. Mackunis; M. McCourt; J.W. Curtis
10:00-10:30 AM	**Nonlinear Flight Control Design for Longitudinal Dynamics** T.T. Tran; B.A. Newman
10:30-11:00 AM	**Integrator resetting for enforcing constraints in aircraft flight control systems** K. McDonough; I. Kolmanovsky
11:00-11:30 AM	**Kalman Filter Based Modification on Helicopter Adaptive Control** M. Okatan; G. Gursoy; I. Yavrucuk
11:30-12:00 PM	**Hardware-In-Loop and Flight Testing of Modified State Observer Based Adaptation for a General Aviation Aircraft** V. Subba Reddiar Pappu; J.E. Steck; B.S. Steele; K. Rajagopal; S.N. Balakrishnan
9:30 AM-12:30 PM, Sun Ballroom 3, **GNC-42. Control of Satellites, Spacecrafts and Missiles**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Chair: Jean Mignot, CNES; Co-Chair: Julian Theis, Hamburg University of Technology	
9:30-10:00 AM	**Quaternion Error Based Optimal Attitude Control Applied to Pinpoint Landing** P. Ghiglino; V. Lappas
10:00-10:30 AM	**Nano-Satellite Transition Mode Attitude Determination and Control** J. Mignot; F. Viaud
10:30-11:00 AM	**Orbital Pursuit-Evasion Hybrid Spacecraft Controllers** W.T. Hafer; H.L. Reed
11:00-11:30 AM	**Linear Parameter-Varying Feedforward Control: A Missile Autopilot Design** J. Theis; H. Pfifer; A. Knoblach; F. Saupe; H. Werner
11:30-12:00 PM	**Feedback Control of a Nonlinear Non-Minimum Phase Missile with Limited Modeling Information** A. Narang-Siddarth; F. Peter; F. Holzapfel
12:00-12:30 PM	**Adaptive Continuous Higher Order Sliding Mode Control of Air Breathing Hypersonic Missile for Maximum Target Penetration** P. Yu; Y.B. Shtessel; C. Edwards
9:30 AM-12:30 PM, Sun Ballroom 4, **GNC-43. Multi-Vehicle Control**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Co-Chair: Tansel Yucelen, Missouri University of Science & Technology	
9:30-10:00 AM	**An Active–Passive Networked Multiagent Systems Approach to Environment Surveillance** J.D. Peterson; T. Yucelen

10:00-10:30 AM	**Market-Based Task Assignment for Cooperative Timing Missions over Networks with Limited Connectivity** G. Oh; Y. Kim; J. Ahn; H. Choi
10:30-11:00 AM	**Distributed MIN-MAX Optimization Application to Time-optimal Consensus: An Alternating Projection Approach** C. Hu; Z. Chen
11:00-11:30 AM	**Nonlinear Guidance of Unmanned Aircraft Formations** O. Tekinalp; S. Ariyibi
11:30-12:00 PM	**Guidance Law Design For Two Flight Vehicles Cooperative Interception** W. Long; F. He; Y. Yao
9:30 AM-12:30 PM, Sun Ballroom 5, **GNC-44. Spacecraft Guidance, Navigation, and Control VI**, Technical Paper, **AIAA Guidance, Navigation, and Control Conference**, Chair: Luca Massotti, European Space Agency (ESA); Co-Chair: David Perez	
9:30-10:00 AM	**A Causality Free Computational Method for HJB Equations with Application to Rigid Body Satellites** W. Kang; L. Wilcox
10:00-10:30 AM	**Spacecraft Attitude Control under Constrained Zones via Quadratically Constrained Quadratic Programming** C. Sun; R. Dai
10:30-11:00 AM	**Sun Safe Mode Controller Design for LADEE** J. Fusco; S. Swei; R. Nakamura
11:00-11:30 AM	**Optimal Low-Thrust Orbital Transfers for Rendezvous Between Active Spacecraft with Return Position Constraints** A. Dutta
11:30-12:00 PM	**A Linear Model for Low-Thrust Spiral Orbits and Optimal Control** D. Kolosa; J.S. Hudson
9:30 AM-1:00 PM, Sanibel 1, **GT-10. New Capabilities in Ground Test Facilities II**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Thomas Wayman, Gulfstream Aerospace Corporation; Co-Chair: Steven Dunn, Jacobs Technology	
9:30-10:00 AM	**Development and Demonstration of A Free-to-Roll Rig in A Blow-down Tri-sonic Wind Tunnel** K. Xie; N. Chen; Q. Shen
10:00-10:30 AM	**Commissioning of a Polysonic Wind Tunnel at the Florida State University** D.H. Van Every; S. Best; J.A. Strike; R. Kumar
10:30-11:00 AM	**Low Power Plasma Facilities for the Investigation of Gas-Surface Interaction at the University of Kentucky** M. Winter; H. Koch
11:00-11:30 AM	**Extension of LENS Shock Tunnel Test Times and Lower Mach Number Capability** A.T. Dufrene
11:30-12:00 PM	**Development of the WVU 1.25s Reduced-Gravity Drop Tower** J. Kuhlman; K. Phillips

12:00-12:30 PM	**MOIRE Thermal Vacuum Structural Stability Testing** D. Waller; J.L. Dember; C. Price; R. Schweickart; R.T. Thompson; K. Whiteaker
9:30 AM-1:00 PM, Miami 3, **GT-11. Advances in Test Techniques, Test Management, & EFD/CFD Integration**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: John Micol, NASA-Langley Research Center	
9:30-10:00 AM	**Strain Gage Loads Calibration Testing With Airbag Support for the Gulfstream III SubsoniC Research Aircraft Testbed (SCRAT)** W.A. Lokos; E.J. Miller; L.D. Hudson; A.C. Holguin; D.C. Neufeld; R. Haraguchi
10:00-10:30 AM	**Motive Methods of Heat Flux Measurement in Stagnation Ablation Test** H. gao; L. Chen; D. Ou
10:30-11:00 AM	**Numerical Study of the High-Speed Leg of a Wind Tunnel** S. Nayani; W.L. Sellers; S.E. Brynildsen; J.L. Everhart
11:00-11:30 AM	**Assessment of New Load Schedules for the Machine Calibration of a Force Balance** N.M. Ulbrich; R. Gisler; R. Kew
11:30-12:00 PM	**Boundary Corrections for Wind Tunnel Testing of Large Ground Vehicles in Strong Crosswind Conditions** C.P. Britcher; W. Mokhtar
12:00-12:30 PM	**Numerical Investigation of Wall Mounting Effects in Semi-Span Wind-Tunnel Tests** M. Bouriga; F. Morency; J. Weiss
9:30 AM-12:30 PM, Osceola Ballroom 1, **IS-13. Intelligent System Approach to Quadcopter Obstacle Avoidance**, Technical Paper, **AIAA Infotech @ Aerospace**, Chair: Elad Kivelevitch, University of Cincinnati; Co-Chair: Adnan Yucel, Lockheed Martin Aeronautics	
9:30-10:00 AM	**Laser-Guided Quadrotor Obstacle Avoidance** A. Stubblebine; B. Feie; B. Redmond; E.H. Kivelevitch
10:00-10:30 AM	**A Taxonomy of Intelligent Systems** E.H. Kivelevitch
10:30-11:00 AM	**Location Determination of an Unmanned Aerial Vehicle in a GPS-Denied, Hazard-Cluttered Indoor Environment** S. Sridhar; A. Sathyan; S. Kukreti; E.H. Kivelevitch
11:00-11:30 AM	**Development of a Model based Fuzzy-PID Controller for the AeroQuad Cyclone Quad-copter** W. Wei; K. Cohen
11:30-12:00 PM	**Target Detection using Image Processing Techniques** J. Hartmann; B. Brown; S. Mummidivarapu; E.H. Kivelevitch
12:00-12:30 PM	**UAS Collision Avoidance, Navigation, and Target Assignment in a Congested Airspace Using Fuzzy Logic** B. Cook; T. Arnett; B. Rich; E.H. Kivelevitch

9:30 AM-12:30 PM, Sun Ballroom 1, **MST-16. Modeling of Vehicle Dynamics III**, Technical Paper, **AIAA Modeling and Simulation Technologies Conference**, Chair: Dennis Crider, National Transportation Safety Board	
9:30-10:00 AM	**Representative Post-Stall Modeling of T-tail Regional Jet and Turboprop Aircraft for Flight Training Simulator** T. Teng; T. Zhang; P.R. Grant
10:00-10:30 AM	**Application of SPRT based reset methods for damaged aircraft parameter estimation** H.J. Koolstra; H.J. Damveld; J. Mulder
10:30-11:00 AM	**Geometry Based Quick Aircraft Modeling Method for Upset Recovery Applications** Y. Nie; E. Van Kampen; Q. Chu; T.M. Kier; G. Looye
11:00-11:30 AM	**Model Based Analysis of Precursors of Electromechanical Servomechanism Failures** M. Battipede; M.D. Dalla Vedova; P. Maggiore; S. Romeo
11:30-12:00 PM	**Effective Model size for the prediction of the lateral control envelope of damaged aircraft** H.J. Koolstra; J. Mulder
9:30 AM-12:30 PM, Sun Ballroom D, **MVC-06. Solution Adaptive Meshing, Error Estimation and Uncertainty Quantification Techniques**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: William Jones, NASA-Langley Research Center	
9:30-10:00 AM	**Anisotropic Norm-Oriented Mesh Adaptation for Compressible Flows** A. Loseille; A. Dervieux; F. Alauzet
10:00-10:30 AM	**Adaptive Optimization-Based Smoothing for Tetrahedral Meshes** S.L. Karman
10:30-11:00 AM	**Metric-Based Anisotropic Mesh Adaptation for Three-Dimensional Time-Dependent Problems Involving Moving Geometries** N. Barral; F. Alauzet; A. Loseille
11:00-11:30 AM	**A Comparison Between Local h-Refinement and a Novel r-Refinement Method** J.R. Grisham; N. Vijayakumar; G. Liao; B.H. Dennis; F.K. Lu
11:30-12:00 PM	**Multigrid Strategies Coupled with Anisotropic Mesh Adaptation** V. Menier; A. Loseille; F. Alauzet
12:00-12:30 PM	**An Anisotropic Adjoint-Based hp-Adaptive HDG Method for Compressible Turbulent Flow** M. Woopen; G. May
9:30 AM-1:00 PM, Osceola Ballroom 5, **SATS-04. Small Satellites - Technologies II**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Jeremy Straub, University of North Dakota	

9:30-10:00 AM	**Information-Driven Systems Engineering Study of a Formation Flying Demonstration Mission using Six CubeSats** G.P. Subramanian; R. Foust; D. Chen; S. Chan; Y. Taleb; D.L. Rogers; J. Kokkat; S. Bandyopadhyay; D. Morgan; S. Chung; F. Hadaegh
10:00-10:30 AM	**A CubeSat Mission and Configuration Analysis for Locating and Mapping Spot Beams of Geostationary Comm-Satellites** J.A. LaSarge; J. Black
10:30-11:00 AM	**Orbit Selection Trade-Offs for LEO Observation Microsatellites** S.H. Mortazavi
9:30 AM-1:00 PM, Sarasota 3, **SD-20. Plate/Shell Modeling**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Zahra Sotoudeh, Rensselaer Polytechnic Institute; Co-Chair: Alessandro Scotti, Pilatus Aircraft Ltd	
9:30-10:00 AM	**Variational Asymptotic Modeling of Cosserat Elastic Plates** R. Kovvali; D.H. Hodges
10:00-10:30 AM	**A New Element for Mixed Plate Formulation** Z. Sotoudeh
10:30-11:00 AM	**Evaluating the Dynamic Behavior and Analytically Predicted Displacements of Printed Circuit Boards (PCBs) Using the "Smeared-Mass" & Fine Mesh Approach** A.A. Sayles; T. Stoumbos
11:00-11:30 AM	**Finite Element Approach to the Static, Vibration and Buckling Analysis of Curvilinearly Stiffened Plates** P. Shi; R.K. Kapania; C. Dong
11:30-12:00 PM	**Free Vibration Analysis of Curvilinearly Stiffened Cylindrical Shells** P. Shi; R.K. Kapania; C. Dong
12:00-12:30 PM	**Nonlinear Membrane Inverse Finite Element Model for Pliant Wings** M. Alioli; P. Masarati; M. Morandini; T. Carpenter; R. Albertani
9:30 AM-1:00 PM, Tampa 2, **SD-21. Computational Reduced Order Models** , Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Daniella Raveh, AIST; Co-Chair: Weihua Su, University of Alabama, Tuscaloosa	
9:30-10:00 AM	**Deterministic and Stochastic Partial Linearization Approach for Nonlinear Reduced Order Models of Structures** R.A. Perez; B.P. Smarslok; M.P. Mignolet
10:00-10:30 AM	**Basis Identification for Reduced Order Modeling of Unsteady Flows Using Sparse Coding** R. Deshmukh; Z. Liang; A. Gogulapati; J.J. McNamara; Z.J. Kolter
10:30-11:00 AM	**Reduced Order Modeling with Local Enrichments for Nonlinear Geometric Vibration of a Notched Panel** X. Wang; R. Perez; G. Phlipot; M.P. Mignolet

11:00-11:30 AM	**Development of Aeroelastic and Aeroservoelastic Reduced Order Models for Active Structural Control** H. Song; J. Qian; Y. Wang; K. Pant; A.W. Chin; M.J. Brenner
11:30-12:00 PM	**Aeroservoelastic Simulation Considering Control System Component Uncertainty** S. Wu; E. Livne
12:00-12:30 PM	**Dynamic Aeroelastic Response of Highly Flexible Aircraft with Wing Camber Deformations** W. Su
12:30-1:00 PM	**Tensegrity Structure Modal Analysis Using a Linear Perturbation Approach** A.A. DiCarlo; B.F. Knight
9:30 AM-12:30 PM, Tampa 3, **SD-22. Advanced Measurement Techniques**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Dexter Johnson, NASA Glenn Research Center; Co-Chair: Bruce Willis, Boeing Defense, Space & Security	
9:30-10:00 AM	**Temporal Aliasing in High-Speed 3-Dimensional Digital Image Correlation Vibration Measurement** T. Beberniss; D.A. Ehrhardt
10:00-10:30 AM	**Experimental Validation of the Dynamic Inertia Measurement Method to find the Mass Properties of an Iron Bird Test Article** A.W. Chin; C. Herrera; N. Spivey; W. Fladung; D. Cloutier
10:30-11:00 AM	**Identification of the Smart Spring properties from FRFs measurements** M. Arras; G. Coppotelli; F. Nitzsche; D. Feszty
11:00-11:30 AM	**Preliminary Investigation of Flight Loads of Single-Engine Air Tankers** K. Rokhsaz; L.K. Kliment
9:30 AM-1:00 PM, Sarasota 2, **STR-20. Special Session: Structural Joints & Repair II**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: S. Kumar; Co-Chair: Donald Norwood, Lockheed Martin Aeronautics	
9:30-10:00 AM	**Experimental and Computational Evaluation of Out-of-Autoclave Adhesively Bonded Repairs on Carbon/Epoxy Fuselage Skin** F.A. Leone
10:00-10:30 AM	**Investigation of Composite Patch Modeling Techniques for Impact Loading Conditions** S.C. TerMaath; A. Sproul
10:30-11:00 AM	**Co-Simulation of Fatigue Crack Growth and Delamination Evolution in Cracked Aluminum Plates Repaired with a Composite Patch** X. Cui; X. Liu; E. Fang; P. Liu
11:00-11:30 AM	**Analytical and Experimental Studies on Delamination Arrest Features in Aircraft Composite Structures** L.I. Richard; K. Lin
11:30-12:00 PM	**Practical Bonded Joint Stress Analysis** A.S. Selvarathinam; C. Rouseau

12:00-12:30 PM	**Effect of Reinforcement Material on the Properties of Pin-Reinforced Metal to Composite Joints** S.B. Clay
12:30-1:00 PM	**Modeling of Stresses in an Axisymmetric Composite Patch-Repair System** P. Upadhyaya; S. Kumar; G. Pal; U. Javed
9:30 AM-1:00 PM, Sarasota 1, **STR-21. Finite Element Analysis**, Technical Paper, **56th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference**, Chair: Robert Taylor, Optimal Structures, LLC.; Co-Chair: Vipul Ranatunga, Air Force Research Laboratory	
9:30-10:00 AM	**Some Observations on the Current Status of Performing Finite Element Analyses** I.S. Raju; K.N. Shivakumar
10:00-10:30 AM	**Enhanced first order shear deformation theory for the improved visco-elastic FEM analysis of laminated composite plates** J. Han; J. Kim; M. Cho
10:30-11:00 AM	**A Refined Zigzag Element for Modeling Sandwich Construction with Embedded Stiffeners** M. Dorduncu; A. Borut; E. Madenci; A. Tessler
11:00-11:30 AM	**Composite Beam Cross-Section Analysis by a Single High-Order Element Layer** P. Couturier; S. Krenk
11:30-12:00 PM	**Three Dimensional Progressive Failure Analysis of Laminated Composite Structures** A.I. Khan; R.K. Kapania; R.C. Batra; E.R. Johnson; J. Guimard
9:30 AM-12:30 PM, Tampa 1, **TES-04. Topics in Terrestrial Energy**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Essam Khalil, Cairo University	
9:30-10:00 AM	**Mixture Preparation Effects on Distributed Combustion** A.E. Khalil Hasan; A.K. Gupta
10:00-10:30 AM	**Experimental Investigation of the Effects of Central Fuel Injectors on Premixed Swirling Flames** N. Syred; F.A. Hatem; A. Valera-Medina; R. Marsh; P. Bowen
10:30-11:00 AM	**Natural Ventilation System Versus Air Conditioning for Temperature Distribution in King Tutankhamuns's Gallery, Egyptian Museum** A.H. Zaki; E.E. Khalil; E.M. Bialy; W. AbdelMaksoud
11:00-11:30 AM	**Tensile Strength and Elongation of Thermoset Polymer Composites for Self-Healing** R.S. Amano; A. Matt; Q. Zhang; S. Strong; S. Mishra
11:30-12:00 PM	**Numerical Investigation Of Stratum Ventilation Performance In Office Room** A.F. ElHaroun; E.M. Bialy; A.A. Fahim; E.E. Khalil
12:00-12:30 PM	**Review of Organic and Inorganic Nanomaterials for Sustainable Energy** S. Arepalli

9:30 AM-1:00 PM, Sun Ballroom 2, **TP-10. Aerothermodynamics II/Other Thermophysics Topics** , Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Alexandre Martin, University of Kentucky	
9:30-10:00 AM	**An Expedient for Alleviating Aerodynamic Heating and Drag on Capsule Forward Heat Shield** N. Morimoto; J. Yamashita; S. Aso; Y. Tani
10:00-10:30 AM	**Blackout Analysis of Small Reentry Vehicles** S. Ramjatan; S. Roy; T.E. Magin; T. Scholz; V. Van der Haegen; J. Thoemel
10:30-11:00 AM	**Adjoint-Based Gradient Calculations for Projected-Force Objective Functions in Viscous, Nonequilibrium Hypersonic Environments** S.R. Copeland; F. Palacios; J.J. Alonso
11:00-11:30 AM	**The Effect of Applied Magnetic Field on Arc Spin Rate in High Pressure Arc Heaters** J.M. Sheeley
11:30-12:00 PM	**Numerical Study on Surface Oxidation of Carbonaceous Nano- and Micro- Particles in a Heavily Sooting Ethylene Turbulent Jet Flame** M. Darbandi; M. Ghafourizadeh; G.E. Schneider
9:30 AM-12:30 PM, Sun Ballroom B, **TP-11. University Space Systems Programs and Microgravity Flight Activities**, Technical Paper, **53rd AIAA Aerospace Sciences Meeting**, Chair: Eric Silk, NASA-Goddard Space Flight Center	
9:30-10:00 AM	**The NASA Sounding Rockets Program** P. Eberspeaker; C. Hesh
10:00-10:30 AM	**Fifteen Years of the “Microgravity Research Team” (MRT) Project Course at West Virginia University** J. Kuhlman
10:30-11:00 AM	**Dynamic Thermal Management for Aerospace Technology: A Review and Outlook** T. Fisher; K. Yerkes; L. Byrd; J. Murthy; A. Alleyne; M. Wolff; S.D. Heister; J. Doty
11:00-11:30 AM	**U.S. Naval Academy Small Satellite Program: Leveraging Small Satellites for Engineering Education and Research** J.S. Kang; B. Bruninga; T.W. Lim